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OF

GREAT BRITAIN AND IRELAND.

NOVEMBER 9TH, 1880.

EDWARD B. TYLOR, Esq., F.R.S., *President, in the Chair.*

The minutes of the last meeting were read and confirmed.

The following list of presents was announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

From Professor HAYDEN.—U.S. Geological Survey, XII.
From Professor ECKER.—Archiv für Anthropologie, Band XII. Viertes Viertel-jahrsheft.
From Professor AGASSIZ.—Notes on the Geology of the Iron and Copper Districts of Lake Superior. By M. E. Wadsworth.
From A. L. LEWIS, Esq.—My Life with the Blacks in Australia. By W. H. Ross.
From the AUTHOR.—Weitere methodische Studien zur Kranio-und Kephalometrie. By Moriz Benedikt.
—— Footprints of Vanished Races. By A. J. Conant.
—— Fashion in Deformity. By Professor W. H. Flower, F.R.S.

From the AUTHOR.—On the Languages of Australia in their connection with those of the Mozambique and of the South of Africa. By Hyde Clarke, Esq.
—— Der Spreewald und der Schlossberg von Burg. By R. Virchow und W. von Schulenburg.
—— Della Macrosomia. By Professor Cav. Cesare Taruffi.
—— Gigante Chawang-in-Sing. By Professor Cav. Cesare Taruffi.
—— Der Hradischt bei Stradonic in Böhmen, und die daselbst gefundenen Prähistorischen Gegenstände. By W. Osborne.
—— Ueber einen Fund aus der jüngeren Steinzeit in Böhmen. By W. Osborne.
—— Savage Life in Polynesia. By the Rev. W. W. Gill.
—— On the Weapons, etc., of the Ancient Hindus. By Gustav Oppert, Ph.D.
—— Some recent publications on Japanese Archæology. By Edward S. Morse.
—— Mensuration des Aires du Crane et la Face. By Dr. Beaumanoir.
—— Il Suicidio. By Professor E. Morselli.
—— Etudes d'anthropométrie sur les canons Anthropologiques. By Dr. Paul Topinard.
—— Who are the Scotch? By James Bonwick.
From the BATAVIAN ASSOCIATION OF ARTS AND SCIENCES.—Tijdschrift voor indische Taal–, land-en volkenkunde. Deel xxv, Afl. 4–6.
—— Notulen van de Algemeene en Bestuurs-vergaderingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen. Deel xvii, Nos. 2–4.
—— Register op de Notulen der Vergaderingen, over de jaren, 1867–1878.
—— Verhandelingen van het Bataviaasch Genootschap. Deel xxxix, 2e Stuk. Deel xli, 1e Stuk.
From the SMITHSONIAN INSTITUTION.—Smithsonian Report, 1878.
—— Smithsonian Miscellaneous Collections. Vols. XVI, XVII.
—— Smithsonian Contributions to Knowledge. Vol. XXII.
—— Anthropological Extracts from the American Naturalist.
From the ANTHROPOLOGICAL SOCIETY OF BERLIN.—Zeitschrift für Ethnologie, 1880, Heft. 2, 3.
From the ACADEMY OF SCIENCES OF KRACOW.—Lud. Serya, XIII, Czesí, 5.
—— Pamietnik Academii Umiejętności w Krakowie. Tom. V.
From the IMPERIAL ACADEMY OF SCIENCES OF ST. PETERSBURG. Bulletin. Tom. XXVI, No. 2.
From the AGENT GENERAL FOR SOUTH AUSTRALIA.—The Folklore, Manners, Customs, and Languages of the South Australian Aborigines. 1st Series. Edited by the Rev. G. Taplin.
From the FOREIGN OFFICE.—Congress Internationale des Sciences Anthropologiques, Paris 1878.
From the ACADEMY.—Sitzungsberichte der Kaiserlichen Akademie der Wissenchaften. Wien. Philos-histor. Classe. Jahrgang, 1879. Nos. 5–10, 1880. No. 1.

From the ACADEMY.—Math-naturw. Classe. 1, Abth., 1879, Nos. 1–10.
II Abth., 1879, Nos. 4-10; 1880, Nos. 1–3.
III Abth., 1879, Nos. 6–10; 1880, Nos. 1–3.
From the ASSOCIATION.—Journal of the Royal Historical and Archæological Association of Ireland, October, 1879.
—— Transactions of the National Association for the Promotion of Social Science, 1879.
—— Proceedings of the Geologists' Association, Vol. VI, No. 7.
—— Report and Transactions of the Devonshire Association for the Advancement of Science, Literature, and Art, Vol. XII.
From the INSTITUTE.—Proceedings of the Royal Colonial Institute, 1879–80.
—— Transactions and Proceedings of New Zealand Institute, 1879.
From the CLUB.—Proceedings of the Berwickshire Naturalists' Club, 1879.
From the INSTITUTION.—Journal of the Royal United Service Institution, Nos. 106, 107.
—— Journal of the United Service Institution of India, Vol. IX, 43.
From the BOARD.—Eleventh Report of the State Board of Health, Mass., U.S.A.
—— First Annual Report of the State Board of Health, Lunacy, and Charity of Massachusetts, 1879. Supplement—Health.
From the SOCIETY.—Journal of the Society of Arts, Nos. 1442–59.
—— Bulletins de la Société d'Anthropologie de Paris, 1880, February to April.
—— Proceedings of the Royal Geographical Society, Vol. II, Nos. 8–11.
—— Proceedings of the Asiatic Society of Bengal, 1880, Nos. 1–6.
—— Proceedings of the American Philosophical Society, No. 105.
—— Bulletin de la Société de Borda à Dax, 1880, Nos. 2, 3.
—— Mittheilungen der K. K. Geographischen Gesellschaft in Wien, 1879.
—— Journal of the Royal Asiatic Society, Vol. XII, Parts 3, 4.
—— Proceedings of the Royal Society, Nos. 205, 206.
—— Transactions of the Asiatic Society of Japan, Vol. VIII, Part 2.
—— Proceedings of the Society of Antiquaries, Vol. VIII, No. 3.
—— Transactions and Proceedings of the Royal Society of Victoria, Vol. XVI.
—— Bulletin de la Société Impériale des Naturalistes de Moscou, 1879, No. 4; 1880, No. 1.
—— Verhandlungen der xi, allgemeinen Versammlung der Deutschen Gesellschaft für Anthropologie, Ethnologie, und Urge-schichte zu Berlin im August, 1880.
—— Mittheilungen der Anthropologischen Gesellschaft in Wien. Band X, Nos. 1–7.
—— Scientific Proceedings of the Royal Dublin Society, N.S., Vol. I, Vol. II, Parts 1-6.

From the SOCIETY.—Transactions of the Royal Dublin Society, Vol. I, Vol. II, Parts 1, 2.
—— Journal of the Asiatic Society of Bengal, Nos. 230–232, and extra number to Part 1, 1878.
—— Annual Report of the Leeds Philosophical and Literary Society, 1879–80.
—— Neunzehnter Bericht der Oberhessischen Gesellschaft für Natur-und Heilkunde.
—— Schriften der Physikalisch-ökonomischen Gesellschaft zu Königsberg, 1880–81.
From the EDITOR.—Revue Internationale des Sciences, Nos. 7, 9, 10.
—— "Nature," Nos. 559–575.
—— "Athenæum," Parts 631–634.
—— Revue Scientifique, Tom. XIX, Nos. 1–19.
—— The American Antiquarian, Vol. II, No. 4.
—— Correspondenz-Blatt, August, 1880.
—— Revue d'Anthropologie, Nos. 3, 4.
—— Matériaux pour l'histoire de l'homme. Tom. XI, liv. 6e, 7e.
—— General Catalogue of Books. Edited by Bernard Quaritch.
—— The American Naturalist, Vol XIV, No. 10.
—— Rocky Mountain Medical Review, Vol. I, No. 1.

The election of CHARLES COOMBE TENNANT, Esq., was announced.

The following paper was read—

On ANTHROPOLOGICAL COLOUR PHENOMENA *in* BELGIUM *and* ELSEWHERE. By Dr. JOHN BEDDOE, F.R.S.

WITHIN the last few years the numerical method has been applied pretty extensively to the determination of ethnological colour types in several countries of Western Europe.

In Britain the Anthropometric Committee is continuing its labours, and has already acquired a considerable mass of facts respecting colours, from a number of private and some official observers. But in this special department continental Anthropologists, though they started behind us, have been enabled by their school organisations to outstrip us completely. In Germany, Virchow has been able to get counted and tabulated, quoad their hair and eyes, the whole school population of suitable age. The only local exception is the city of Hamburgh,

which has always borne a Philistine reputation as regards matters of science. In Switzerland, Dr. Guillaume, of Neuchâtel, and others, have successfully stirred up the cantonal authorities and schoolmasters; and I believe the entire school population has been reported on except in Geneva and Tessin, whence returns have not come in. In Belgium, Professor Vanderkindere moved the Geographical Society, at whose instigation the Minister of the Interior enabled him to obtain from the schoolmasters of the whole country the particulars required. And I believe that a similar enquiry has been projected, or actually undertaken, in Holland and in Bohemia.

The drawbacks for the value of information thus obtained are, of course, numerous. They are due partly to faults in the method and the observers, partly to the nature of the material. The classification of the colours is very difficult. Broca's plan is the best, but is too complicated for large numbers and unscientific observers. Moreover, it does not strictly apply to the mixed varieties of eye-colour, which are pretty frequent. Still, this is a small defect, and the illustrious author of the arrangement had foreseen it, and in some degree provided for it. The determination of colour of hair is more difficult. They run into each other by infinite gradation, they vary with the changes of illumination, and finally they are not flat tints, and the colour-standards of Broca and General Pitt-Rivers, excellent for the skin, are by their flatness incapable of being identified with the hues of hair. It is my opinion, and I think that Mr. Brabrook and General Pitt-Rivers agree with me, that flat tints, striped with minute dark lines, might be adopted as standards, but hitherto I have not succeeded in bringing this plan to bear.

The personal equation of the observer has also to be considered. It varies exceedingly, and can, to some extent, be predicted. Thus a person who has been brought up among a xanthous population, is apt to be inclined to apply the name black to dark shades of brown, and one belonging to a melanochroic district will call the chestnuts "blonde" and the yellows "red." In this way local differences are likely to be underestimated, and I am disposed to think that they have been so in Belgium and in Germany.

The material utilised consists of school children. Undoubtedly the hair gradually darkens from infancy up to adult age in the immense majority of persons; but it does so with such uniformity that provided we always compare children with children and adults with adults, there is little fear of serious error. Dr. Guillaume has given us a valuable comparison of the colours in the school children and in the conscripts of Neuchâtel. Hair called "black" is several times more frequent in

the latter than in the former. Sexual differences exist; thus brown eyes are more common among women and grey eyes among men; at least this is the case in England, and, I think, everywhere else; but if all the children of both sexes are examined, this becomes quite immaterial.

It is a question whether it is better to combine the eyes and hair in a single observation, making such categories as, *e.g.*, light eyes with dark hair, dark eyes with red hair, and so forth, or to observe and tabulate the eyes and the hair separately. The latter plan is much more simple and easy, and likely to be more accurately worked, and some have accordingly adopted it. I myself have always adopted the former plan, because it yields some information which in the simpler one slips through one's fingers. Virchow and the Swiss have also adhered to it (the former), but Virchow has, I think, needlessly complicated it by asking in some cases for the colour of the skin also. Thus he has a category of "brown eyes, brown hair, fair skin," and another of "brown eyes, brown hair, dark skin or complexion." I confess that I think the determination of the colour of the child's skin, washed or unwashed, is a matter of which the difficulty exceeds the importance. I have always made five colours of hair—red, fair, brown, dark, and black—and three colours, or, as my lamented friend, Broca corrected me, *shades* of eyes; and thus I got fifteen categories, and provide for every possible combination. Virchow's plan has but twelve categories, but leaves a number of combinations unprovided for. He makes but four colours of hair—red, fair, brown, and black—and Vanderkindere follows him, with the result, I am sure, that the number of black-haired is enormously exaggerated. With this exception the plan of the latter is perfect; he rightly neglects the skin, and gets the particulars separately for each child, so as to be able to form twelve categories if he pleases. Though he has not published the figures for all of these, he has made a most useful selection, and based thereupon a series of instructive maps, showing the distribution of the blonde and brunette types in the several arrondissements and cantons of Belgium. Virchow and his coadjutors have also produced an excellent map, but I do not think the figures on which it is based have been published so fully and accessibly as by Vanderkindere. I do not think the Swiss statistics have been published at all; at least I have been unable to procure any of them except those of Dr. Guillaume for Neufchâtel.

I will now state briefly the results of these enquiries, so far as I am acquainted with them.

In Germany, speaking roughly, I may say that the blonde type prevails most decidedly in Schleswig-Holstein, and not much less so in the north-western and north-eastern provinces;

and that it gradually yields to the brunette as one proceeds southwards and south-westwards, the brown maximum being attained in parts of Alsace-Lorraine and Bavaria. The most considerable anomaly is the comparative prevalence of the brown type in the Thuringian region. I confess to having been somewhat surprised at the little difference that exists between the partly Frisian or Danish provinces about the Lower Elbe, and the semi-Slavonic regions of Prussia and Saxony. I should have thought the latter less blonde than they appear to be, and my own impression is a little strengthened by another valuable series of observations, to which I have not hitherto alluded, because they were not conducted on the same large official scale and by the same machinery. I mean those of Professors Joseph Majer and Kopernicki, of Cracow, on the population of Gallicia, whose admirable work is not so much known as it deserves to be, because written in Polish. It is, of course, however, likely enough that the Wends of the north-west, the Obotrites, Lusatians, &c., may have been, and may remain, a fairer race than their neighbours and kindred the Poles and Ruthenians. The dark complexion and un-Germanic aspect of many of the inhabitants of Thuringia I have myself observed and commented on long ago; thus Rühla is noted for a dark type of female beauty.

Of the Swiss results I have, as already said, seen very little. Those for the northern border appear to be unconformable with the German ones for the same frontier, but this I am disposed to attribute to different ideas of the nomenclature of colours. It would seem that here, too, the blond type is strongest in the north, as in Aargau, and that the brown one acquires strength as one proceeds southwards, south-westwards, and south-eastwards, into Glarus, Graubundten, the Valais, and Vaud.

The facts yielded by the Belgian returns are, as I have said, particularly interesting, and are very clearly set forth in a monograph by Professor Vanderkindere. Belgium, we know, is pretty equally divided as to language by a line running nearly due east and west, into the Walloon and the Flemish or Brabanto-Flemish regions. The former includes the whole, or nearly so, of Hainault, Namur, Belgium, Luxembourg, and Liege, the latter East and West Flanders, Antwerp, Limburg, and the greater part of Brabant. The Walloon, or French-speaking division, contains twelve arrondissements, the Flemish-speaking one, fourteen. If now we divide the whole number of the observed into three types, the blonde, the brown, and the neutral, or intermediate or mixed, we find that the fourteen arrondissements having the largest proportion of blondes correspond with the fourteen Flemish ones; and the twelve having most browns

with the twelve Walloon arrondissements; while Verviers, which is the only one of the twelve which includes a considerable minority of Teutonic speech, stands, as it ought to do, fifteenth on the blonde and twelfth on the brown list. When we come to the minuter subdivisions called cantons, the contrast continues almost as striking. There are 203 cantons, of which more than half are wholly Flemish, a few are of mixed language, and the remainder Walloon. Excluding the mixed cantons and those which actually touch the linguistic frontier, I find that when they are all arranged (which Vanderkindere has done) numerically in the order of prevalence of the blonde type, only ten of the Flemish cantons go beyond the hundredth place, and only three of the Walloon ones fall below the hundredth. Vanderkindere remarks the rather large proportion of dark hair in Ostend and the neighbouring maritime cantons of West Flanders, and thinks it may be due to the aboriginal piscivorous population having settled there and never been extirpated.

The figures do not help us much towards considering the question whether city life has any influence in altering physical characteristics. Most of the urban cantons have a large rural element. Those most available are Brussels, Mechlin, Verviers, Lessines, and, less certainly, Ostend, the two of Antwerp, the two of Liege, and the two of Ghent. Of these, Ghent and Ostend are decidedly, and Antwerp and Verviers less decidedly, darker than they should be—darker, that is, than the average of the surrounding cantons, while Brussels, Mechlin, and less distinctly Liege and Lessines, are fairer than might be expected. The western canton of Ghent is remarkably dark, but this may be due to the influx of foreign artizans into this great manufacturing town.

The Flemish country is flat or gently undulating, sandy or loamy; the Walloon country, for the most part, rough, hilly, and well-wooded, the soil resting on carboniferous limestone, coal measures, &c. But that these facts have little or nothing to do with the colour of the hair and eyes of the population is shown by the position of Hainault, which, resembling Brabant in surface and soil but inhabited by Walloons, shows a larger proportion of dark-haired children than any other province.

On the whole, this work of Professor Vanderkindere's supplies some of the most powerful evidence we have for the permanence or, to speak more cautiously and accurately, for the longevity of even such apparently trivial and variable physical characters as the colour of the hair and eyes. By its publication the arguments for undertaking a similar investigation in the primary schools of the British Isles have been greatly strengthened. I have kept in view the desirability of

procuring such a series of facts for the last five-and-twenty years; but the task transcends the powers and leisure of a single individual, or even of such a body as the Anthropometric Committee. If the thing is to be done on a scale, and with a completeness comparable with that obtained in Belgium, it must be with a certain amount of official help and countenance. These are much more difficult to obtain in Britain than in Belgium; but with the assistance of the British Association we need not despair of securing them before the landmarks of British ethnology have been utterly blurred by migration and counter-migration.

Discussion.

Mr. C. Roberts: As the rate of pigmentation is more rapid in the eyes than in the hair, I think it is desirable that the observations made on each organ should be made separately, and afterwards combined, or rather compared together. The darkening of the hair goes on slowly from birth to age of puberty, when it often takes a sudden leap corresponding with the other marked physiological changes which occur at that period. With the eyes it is quite otherwise. At birth the iris is quite colourless, the dark blue, and, indeed, all the shades of blue at a later period of life, being due to the black inner pigment showing through the semi-transparent iris; but the dark outer pigment which distinguishes the brown and black eye is deposited on the surface of the iris during the course of the first two or three years, and it changes little afterwards. The consequence is that we often see young children with dark eyes and fair hair, which are difficult to classify. Judging by the hair they are blondes, by the eyes brunettes, and they will most develop later in life all the characters of the darker element of our population. For the same reason I think little useful anthropological knowledge will be gained by making observations on a large number of children of different ages, as the result will depend on the colour of the hair and eyes of the predominant age, and this in its turn will depend on the kind of schools and other circumstances under which the observations are made.* If the children were arranged in groups of two, or at most of three years, they could be compared together, and the order of pigmentation could be determined. Unless analysed in this manner, I should have little confidence in the statistics which are reported from the Continent, and referred to by Dr. Beddoe, in determining the racial elements of the people.

Mr. Lewis agreed with the previous speaker in hoping that statistics of hair and eyes would be so drawn up as to show not merely the total quantity of dark or light hair and eyes among a

* Note by Dr. Beddoe.—The limits of age, and the predominant ages, would be the same throughout the kingdom in the primary schools. This objection is therefore, I think, invalid.

number of persons, but to distinguish between those who had dark hair and eyes, light hair and eyes, light hair and dark eyes, and dark hair and light eyes. He had no doubt that there was a distinct type the representative of a race of people in this country having dark hair and light eyes; some ethnologists believed in two races only, one light haired and light eyed, and the other dark haired and dark eyed, of which all other varieties were mere mixtures, but he was satisfied that, if a sufficient number of statistics distinguishing those varieties could be collected throughout the country, the existence of a third type would be clearly demonstrated.

The PRESIDENT, Major-General PITT-RIVERS, Mr. BOUVERIE PUSEY, and Mr. BRABROOK also took part in the discussion.

The following paper was read by the author:—

CERTAIN REASONS *for believing that the* ART *of* MUSIC *in* PREHISTORIC TIMES *passed through* THREE DISTINCT STAGES *of* DEVELOPMENT, *each characterized by the invention of a* NEW FORM *of* INSTRUMENT, *and that these stages invariably succeeded one another in the same order in various parts of the world.* By Mr. ROWBOTHAM.

MUSICAL instruments, though their varieties may be counted by hundreds, are yet really reducible under three distinct types:—1, the drum type; 2, the pipe type; 3, the lyre type. Under the first head fall drums, rattles, tambourines, gongs, triangles, castanets—in a word, all instruments of percussion. Under the second head fall flutes, horns, trumpets, fifes, hautboys, bugles—all wind instruments. And under the third head fall all stringed instruments, comprising the harp, lyre, lute, violin, dulcimer, piano, &c., &c. Now these three types are representative of three distinct stages of development through which prehistoric music has passed—and the stages occur in the order named. That is to say, the first stage in the development of instrumental music was the drum stage, in which drums and drums alone were used by man.[1] The second stage was the pipe stage, in which pipes as well as drums were used. The third stage was the lyre stage, in which lyres were added to the stock. And as in the geological history of the globe, the chalk is never found below the oolite nor the oolite

[1] Understand by "drum," instruments of percussion, from the rudest possible form of two pieces of stick beaten together, for instance, to the developed drum or rattle as we have it to-day.

below the coal, so in the musical history of mankind is the lyre stage never found to precede the pipe stage, nor the pipe stage to precede the drum stage.

That this should be the order of development seems natural, since it corresponds to the constitution of the factors of which instrumental music is composed—rhythm, melody, and harmony. Rhythm is the most elementary,—now the instrument of rhythm is the drum. Melody is an advance on rhythm, and was given by the pipe; while harmony, which is the most advanced of all, was ushered in by the lyre.[1]

And not only to their constitution but to their chronology, as a glance at what is going on around us will reveal. For in the development of the musical sense first comes the appreciation of rhythm, of melody next, of harmony last—first, the power to beat time with the foot to a tune in a concert room; next, the power to appreciate the melody independent of its rhythm; lastly the comprehension and appreciation of the harmony. So in pianoforte playing, first *time*, then the right hand, which takes the melody, then the left hand which gives the harmony. Thus also in the history of modern music, an era of rhythm came first under Bach; an era of melody next under Haydn and Mozart; Beethoven bridges over the transition to the era of harmony which has attained its climax under Wagner and Liszt.

There is another reason why drum, pipe, and lyre should have been the order of the stages in prehistoric time—I allude to the evidence furnished by the mechanical complexity of the instruments themselves. The drum is evidently the simplest of all; the pipe is more complex than the drum; but the lyre, which consists of strings stretched on pegs is the most complex of all.

In keeping with this is the fact that savages sometimes have the drum alone, but never the pipe alone or the lyre alone; for if they have the pipe, they always have the drum too; and if they have the lyre, they always have both pipe and drum.

Meeting at the bottom of the ladder with the Veddahs of Ceylon,[2] the Mincopies of the Andamans,[3] and the inhabitants of Tierra del Fuego[4] who have no musical instruments at all, we find the drum to be the only musical instrument known

[1] In speaking of the "harmony" of prehistoric music, I am merely using the word in the sense of the Greek *ἁρμονία*, which, though very different from what we understand by "harmony," was, nevertheless, the undoubted embryo from which modern harmony grew,

[2] Tennent's "History of Ceylon."

[3] Mowat's "Andaman Islands."

[4] "Narrative of the Surveying Voyage of H.M.Ss. 'Adventure' and 'Beagle.'"

among the Australians[1] (with whom it appears in its most rudimentary form), the Esquimaux,[2] and the Behring's nations generally,[3] the Samoyedes, and the other Siberian tribes,[4] and, until a comparatively recent date, the Laplanders.[5]

With the Polynesian Malays[6] and the Papuans,[7] the pipe makes its appearance, while in no single instance is the drum found wanting. The same holds good of the South American Indians. Both pipe and drum are in use among the tribes on the Upper Amazon,[8] the Indians of the Rio Negro[9] and the Uaupés,[10] the Tupís,[11] the Omaguas,[12] and neighbouring tribes,[13] the Artaneses[14] and Yucunas,[15] the Itatines,[16] and generally the rest of the Brazilian tribes,[17] the aborigines of Guiana,[18] the

[1] Eyre's "Discoveries in Central Australia," II, pp. 228, 237;" Grey's "Journal of Two Expeditions of Discovery in N.W. and W. Australia," II, p. 305.

[2] Parry's "Second Voyage," p. 530; Crantz's "History of Greenland," I, p. 176.

[3] Whymper's "Alaska," p. 143.

[4] Richardson's "Polar Regions," p. 335; Smith's "Wonders of Nature and Art," London, 1803, II, IV, pp. 277, 264, etc.

[5] That is to say, till within about 300 years ago. See Scheffer's "History of Lapland."

[6] For the Society Islands, see "Captain Cook's Voyages." Published by John Tallis, I, p. 87. For the Navigator Isles, Turner: "Nineteen Years in Polynesia," p. 211. For the Friendly Isles, "Cook," I, p. 427, and in the common edition, 1st Voyage, p. 397; see also Mariner's "Tonga Islands," II, 214, 218. For the Marquesas, Melville's "Life in the Marquesas," p. 185. For the Sandwich Islands, where, however, the pipe is absent, "Cook," II, 250. And for the Maories of New Zealand, "Captain Cook," I, 196, who, in addition to the pipe and drum have also the lyre: Dumont d'Urville's "Voyage de l'Astrolabe II," 446.

[7] For the Papuans, see Williams' "Fiji and the Fijians," I, 163; Turner's "Nineteen Years in Polynesia," p. 90; Jukes' "Voyage of H.M.S. 'Fly' (for the Erroob Papuans), II, 176; for the Papuans of New Guinea, I, 274, and plate I, 277. Cf. Rosenberg's "Reistochten naar de Geelvinkbaai of Niew Guinea," Amsterdam, 1870, p. 93; and for the drum form in the Papuan Archipelago, Schouten's "Voyage in Purchas: His Pilgrimes," I, 2, 100.

[8] Bates' "Amazons," II, 201; Wallace's "Travels on the Amazon," 504.

[9] Wallace, "Travels on the Amazon," 259.

[10] *Ibid.*, 282.

[11] Bates' "Amazons," I, 311.

[12] Southey's "History of Brazil," I, 89, 90.

[13] *Ibid.*, 84, 95. Orellana, in his narrative of his expedition down the Marañon, speaks of one of the tribes having "*three-stringed rebecks;*" but such a statement, coming from such an authority, is, in presence of overwhelming evidence to the contrary, comparatively worthless. Herrera gives cogent reasons for suspecting the truth of Orellana's narrative in many of its details, and, indeed, no one can read it without being aware of innumerable bouncers. But even should the statements prove true, it does not militate against our theory for an instant, for in the same sentence he speaks of the same tribe having also pipes and drums.

[14] Southey's "Brazil," I, 139.

[15] *Ibid.*, III, 720.

[16] *Ibid.*, I, 341.

[17] *Ibid.*, I, 206, which bears out Bates' general remark about the Tupís.

[18] Brett's "Indian Tribes of Guiana, 320, 154 (plate).

Aymara Indians of Bolivia and Peru,[1] the Huacho Indians of Peru,[2] the Abipones of Paraguay,[3] and the Patagonians.[4] These are all the cases I have examined in South America, and they all yield the same result—that is to say, the pipe is nowhere to be found without the drum being likewise present.[5] And what is true of the South American Indians is equally true of the North American Indians.[6]

But where the lyre appears, there both pipe and drum are also found as its never failing complement, as with the Dyaks of Borneo,[7] the Khonds of Khondistan,[8] the Maories of New Zealand,[9] the Finns[10], the Tartars,[11] the Cossacks,[12] the Turkomans,[13] the Hindus,[14] and the nations of history.[15]

These facts would seem to do much towards confirming the

[1] Forbes, 'On the Aymara Indians of Bolivia and Peru,' in "Transactions of the Ethnological Society," 1869, p. 233.

[2] Stevenson's "Travels in South America," I, 403.

[3] Dobrizhoffer's "History of the Abipones," II, 70, 209, 217.

[4] "Narrative of the Surveying Voyage of H.M.Ss. 'Adventure' and 'Beagle,' II, p. 162; R. Brown's "Races of Mankind" plate; Musters' "At Home among the Patagonians," p. 77.

[5] But see *infra*.

[6] Catlin's "North American Indians," I, 238, 243; Schoolcraft, II, 514; III, 486. Catlin even speaks about "lutes" being found among them, but, provokingly enough, though he mentions "lutes" twice in his book (I, 142; and 1, 88); he goes into no details, nor even gives a description in the place where he deals with the other instruments—on the contrary, omits them entirely from his list. But to this existence of "lutes" among the North American Tribes, Schoolcraft says, No; and on all counts, Schoolcraft's seems the probable view. For, by the way, Catlin talks of "lutes" *ἔμοιγε δοκεῖ ὁ κατλῖνος ὀυκ ἀκριβῶς διαγιγνώσκειν τὸ λυτε τί ἐν τῶ ὄντι δύναται.* Speaking with great reserve on so delicate a question, I refrain from even hinting my opinion in plain English.

[7] Marryat's "Borneo and the Indian Archipelago," pp. 84, 133 (plate). St. John's "Life in the Forest of the Far East," I, 118.

[8] Campbell's "Narrative of Thirteen Years' Service among the Wild Tribes of Khondistan," pp. 16, 164.

[9] *Supra*.

[10] Pinkerton, I, 473.

[11] Mary Holderness' "Notes relating to the Manners and Customs of the Crim Tartars;" Clark's "Travels in Russia, Tartary, and Turkey," 316; "New Edinburgh Review," 1822, p. 518.

[12] Atkinson's "Travels on the Upper and Lower Amoor," p. 167.

[13] Chodzko's "Popular Poetry of Persia," pp. 62, 419.

[14] "New Edinburgh Review," 1822, p. 525.

[15] Pursuing the enquiry among those semi-civilised nations which meet us on the threshold of history, such as the Celts, for instance, it is only to find that what is true of others is likewise true of them. For the three forms among the Celts, see Jones' "Welsh Bards," folio, p. 90; in Ancient Scotland, *ibid.*, 75, Buchanan's "History of Scotland," Lib. I; in Ireland, Jones, *ibid.*, and "Transactions of the Royal Irish Society," VIII, "Antiquities," p. 11 (which proves that the pipe-form was known). Africa, which is the bugbear of theorists, offers some slight difficulty, from the fact that among some few of the tribes the drum and lyre are found alone, the pipe being wanting. It will be observed that I have made no mention of Africa in the above, as I intend in some subsequent contribution to endeavour to prove that the lyre was passed down into Africa from Egypt while the majority of the tribes were yet in the drum stage.

opinion that the drum is the oldest, the pipe the next, and the lyre the youngest of the three. But there is another reason why we should adopt a chronology which assigns the seniority to the drum. Archaic types are preserved in the amber of religion. The vestments of the clergy gives us valuable aid in studying the antiquities of costume, and what we may call

The Evidence of Ritual

Is of equal value in studying the antiquities of music. And as far as I have been able to gather, the instrument of ritual among savage nations is invariably the drum. Throughout Africa where both pipe and lyre are known, if an instrument is employed at all in the fetish ceremonies it is invariably the drum. The fetish ceremony among the Camma negroes, which Du Chaillu mentions is a case in point, and other instances of the use occur in his book.[1] Throughout the South Sea Islands the drum is the instrument of the priests.[2] Catlin mentions it as appropriated to religious ceremony among the Assineboins,[3] Mandans,[4] Crows,[5] and Sioux,[6] and Schoolcraft mentions its use among the Medáwin, who pervade the whole body of the tribes from the Atlantic to the Pacific, and from the Gulf of Mexico to the Arctic Ocean.[7] It is the instrument of the priests in Guiana,[8] and forms an essential element in the ritual of the Patagonian wizards;[9] similarly used among the Abipones,[10] and other South American tribes, particularly the Guaycurus,[11] and not to mention its use in ritual among the Peruvians and Mexicans, a glance at ancient history will remind us of the sistrum of the Egyptian priests, and the cymbals of the Assyrian and Hebrew priests; and coming down to a later date, we shall find the case precisely the same. With the Greeks, for instance, the drum, in its various forms of drum, tambourine, cymbal, and rattle, was regularly employed at the Cotytia and Bendideia of the Thracians,[12] the Orphic rites,[13] and by the Corybantes, Cabeiri, Idœan Dactyli, and Curetes at the rites of Cybele, and

[1] Du Chaillu, p. 241, etc.
[2] Ellis' "Polynesian Researches," I, 282.
[3] Catlin's "North American Indians," I, 55.
[4] *Ibid.*, 126.
[5] *Ibid.*, 189.
[6] *Ibid.*, 238.
[7] Schoolcraft, I, 360.
[8] Purchas: His Pilgrimes, IV, 1274.
[9] "Surveying Voyage of H.M.Ss. 'Adventure' and 'Beagle,'" II, 262.
[10] Dobrizhoffer, II, 65, 84, 278–9.
[11] Southey's "Brazil," I, 121.
[12] Strabo, X, iii, 16.
[13] *Ibid.*

the Idœan Zeus,[1] and at the rites of Dionysus,[2] —and that metal drum which we suspend in our own churches, and which we call a bell, may be taken in to swell the list.[3]

The next species of evidence which I shall bring forward, is

The Evidence of Mythology.

The legends of savages, as far as I have been able to gather any, all testify to the high antiquity of the drum. But the mythology of civilised peoples is a far more fertile field for the present subject, and gives many valuable hints about the *succession* of the stages. And it is singularly confirmatory of our theory, that whenever a definite sequence is alluded to in legend, or can be gathered from it by the comparative method, the lyre is always made to follow the pipe, and the pipe to follow the drum. Minerva invented the flute, but afterwards threw it away, because it distorted her features, and took to the lyre instead. When Apollo received the lyre from Mercury, he praised the wonderful sound which neither gods nor men had heard before, "*for up till then he had been contented with the amorous sighing of the flute.*"[4] The struggle between the two instruments for supremacy is adumbrated in the legends of Apollo and Marsyas, and Apollo and Pan, and it is in keeping with our theory, that in both cases the contest ended in the victory of the lyre over the superannuated pipe, Marsyas being flayed for his impertinence, and Midas being but an ass for awarding the palm to Pan.[5] But long before Athena's flute or Apollo's lyre was heard, music had come into being with the cymbals of the Curetes, says the

[1] Strabo, X, iii, 7, 11.

[2] Plutarch "De Iside," LXIX, p. 378.

[3] An examination of legal formularies, which are also, like religious ceremonies, a repository of the old, would no doubt yield a similar result. Thus, Thornton tells us in his "History of China," that the phrase "Keih-yuen," by which the officers call attention in the Chinese law courts, means literally "strike the drum." Throughout Africa scarcely any legal formulary exists without drum-beating forming a special clause in it. At the paying of the hongo, or tribute, the drums beat the "satisfaction," *e.g.*, at M'ganga (Speke's "Source of the Nile," p. 121) and at Uzinza (*Ibid.*, 126), &c., &c. A performance with drums and drumsticks formed part of an old ceremony of swearing fealty at Karague (*Ibid.*, 224). But I have neither looked much into this species of evidence, nor do I attach much value to it.

[4] "*θαυμασίην γὰε τήνδε νεήφατον ὅσσαν ἀκούω*
ἣν οὐ πώποτέ φημι δαήμεναι ὔντε τιὺ ἀνδρῶν
οὔτε τιὺ ἀθανάτων, οἳ Ὀλύμπια δώματ' ἔχουσιν.

. . . . . .

καὶ γὰρ, ἐγὼν Μούσῃσιν Ὀλυμπιάδεσσιν ὀπηδός,
τῃσι χόρος τε μέλουσι καὶ ἱμερόεις βρόμος ἀυλῶν."

Hymn to Mercury, 443.

[5] "Calamis agrestibus insonat ille.
Barbaricoque Midan—delenit carmine."—Met. XI, 162, *seq.*

legend in Herodotus,[1] and from these simple elements all Greek music, it avers, was subsequently derived. This is a plain enough suggestion that the drum was the oldest form, and the idea is kept up in the story in Floridus Sabinus, which makes the first music ever heard in the world to have been the music of the anvil. The passage in the Bacchœ of Euripides, which alludes to the legendary origin of the drum and pipe, will, I think, be allowed, without much pressing, to concede the seniority to the former.[2]

The legends of Egypt tell the same tale as those of Greece. Osiris invented the flute and Isis the sistrum; but it was the Egyptian Hermes or Thoth, a deity of later date than either of them, who was credited with the invention of the lyre.[3] And Indian legend keeps up the order of succession. Vishnu was the inventor of the trumpet, and in his avatar as Krishna of the flute; but it was Nareda, the son of Brahma, who belongs to the second generation of gods, that first invented the lyre.[4]

Droppings Out.

This is a thing which sometimes happens, that one of the forms drops out of use. Thus we have evidence of the existence of the drum in Lapland from time immemorial; and we know for a fact that drums were used there as late as the year 1600.[5] Yet by 1732 the drum had died out so completely that Linnæus, who travelled through Lapland in that year, could write, "The Laplanders know no musical instrument except the lur (a sort of trumpet), and pipes made of the bark of the quicken tree or mountain ash."[6] The Muras of the Amazon have at the present day no instrument but the horn;[7] but the fact that they are a Tupí tribe, and that all the Tupís have the drum, seems to prove that this solitary exception is a case where the drum, from some cause or other, has dropped out of use. The same method of reasoning may be applied to the Caishánas, who at the present day have no instrument but the pipe.[8] Only 400 in number, they are an insignificant branch of the Shumanas, who, along with the Passés, Jurís, Mauhés, and Tucúnas, form a network of intimately connected tribes. Now all these tribes have the drum. It is, therefore, highly probable that the Caishanas at one time had it too. In the same way, in the teeth of the fact that both drum and pipe were known to the Celts, we find both

[1] I cannot find the passage in Herodotus, but my authority for the quotation is Dr. Burney, I, 261.
[2] Bacchæ, 125.
[3] Burney, I, 194, 201, cf. 202.
[4] Coleman's "Mythology of the Hindus," pp. 7, 15, pl. 12, fig. 2.
[5] Scheffer's "History of Lapland," p. 58.
[6] Linnæus' "Tour in Lapland," II, 51.
[7] Bates' "Amazons," II, 10.
[8] *Ibid.*, 376.

instruments to have dropped out completely in Iceland (which was colonised by Celtic Christians from Ireland, in the year 795), and the only form known there 300 years ago to be the lyre.[1]

It will be noticed that if a dropping out occurs, it is always the drum which drops out in presence of the pipe, and the pipe and drum in presence of the lyre. And since there is no instance of the pipe giving place to the drum, or the lyre giving place to either of them, it seems highly probable that the drum stage, the pipe stage, and the lyre stage, were three *progressive* stages of musical development.

The embryology of the art ends with the evolution or introduction of the three forms of instrument; but in order to discover what laws governed the development of the embryo, we may be allowed to avail ourselves of any hints which the history of the full-fledged art has to offer, and when we bear in mind that the strolling pipers had spread all over medieval Europe long before the strolling fiddler was heard of,[2] and that the drummers and trumpeters formed respectable and influential guilds before the time of either,[3] that the history of the modern orchestra has proceeded on the same principle—regular orchestras in the sixteenth century consisting of 12 wind and percussion instruments to 2 strings;[4] in the seventeenth century, of 25 wind and percussion to 19 strings;[5] but by the time of Beethoven, of only 14 wind and percussion to 47 strings; that the history of the composite instruments tells the same tale, the organ, the composite pipe, coming first, attaining its full maturity, and being on the high-road to decline before the piano, the composite string, had well commenced its existence.[6] I think these hints, conjoined with the bearings of the facts mentioned before, will go to confirm our original position as to the order of the three stages in the development of pre-historic music—the drum stage, the pipe stage, and the lyre stage—which, it seems to me, are to the historian of music what the stone, bronze, and iron ages are to the archæologist. And though it is to the

[1] Von Troil's "Letters on Iceland" in Pinkerton, I, 652.

[2] Köstlin's "Geschichte der Musik," I, ii. 2, §3; Becker's "Hausmusik in Deutschland," p. 18.

[3] Reissmann's "Geschichte der Musik," II, 8; Becker, *ibid.*

[4] Brendel's "Geschichte der Musik," 77.

[5] *Ibid.*

[6] The organ began its development in the Dark Ages, and reached its maturity about the beginning of the eighteenth century, since the middle of which it has rapidly declined. The harpsichord and virginal, in their very rudest form, cannot be put back earlier than the middle, or, at the utmost, the beginning of the sixteenth century. Nothing was done on the harpsichord till the time of young Scarlatti and old Bach, that is, till the beginning of the eighteenth century. The piano, as is known, was not till later.

history of music that they are chiefly valuable, they are by no means without import in the spheres of archæology and ethnology. And what that import particularly is it will be my business in some future contribution to attempt to show.

Discussion.

The President supported in a general way the author's view that the succession of musical instruments has been—1, drum class; 2, pipe class; 3, harp class. He presumed that Mr. Rowbotham, in speaking of harmony in connection with the lyre, meant the word in its ancient sense, not as what we now call harmony in part-music or accompaniment. He thought exception might be taken as to the way the absence of an instrument was argued on, so as to prove a case either way. On the one hand the absence of pipe and lyre in a tribe having drums was construed to mean that the tribe had never got beyond the drum. But, on the other hand, with a more civilised people having the lyre and no pipe, it was argued that they had had the pipe, but given it up.

Mr. C. Roberts remarked that having travelled among the red races of the far west of Canada, and the native races of Queensland and New South Wales, he had learnt to associate in his mind the sound of the drum with darkness and night; and he had observed that many of the Asiatic races, especially in India, make the night hideous with their drums, while they seem to make little use of them by day. He was inclined to think, therefore, that the drum was originally used for the purpose of signalling, and that it was afterwards developed into a musical instrument.

Mr. Rowbotham, in reply, stated that he had purposely avoided entering into the question of the construction or origin of the instruments. He might, however, be allowed to remark, in illustration of one or two allusions made by one of the speakers to superstitions connected with the drum, that he had lately advanced the theory (in the "Contemporary Review" for October) that instrumental music originated as a form of fetishism, its secularisation into an art, as we understand it now, being a later phase in its development. Such a theory, though perhaps a little bold, had the advantage that it explained much that was otherwise inexplicable; for instance, the Maraca cult of the Brazilians, the drum fetishism of the Lapps, the superstitions clinging to the instrument all through the North and South American tribes, among the Esquimaux, the Samoyedes, and other Siberian tribes, which might, indeed, be traced in an unbroken line from Lapland, all along the north coast of Asia, crossing over at the Fox Islands into America, and descending through both continents to the bottom of Patagonia. The hypothesis of the drum, and therefore all instrumental music, having originated as a fetish, furnished a convenient explanation for much of this; and for the further fact that the drum, when used solo, is never used among savages as a musical instrument, *but always as a fetish*, or at the least

a quasi-fetish—its employment as a musical instrument being limited to its *applied* use as an accompaniment to the dance or song.

In reply to Mr. Roberts' suggestion that the drum originated as a signal, Mr. Rowbotham said that a complex system of drum signalling certainly existed throughout a pretty extensive area in the interior of Africa, which he believed Commander Cameron was the first to call attention to before the British Association in 1878; but it stopped there, and being limited to specific tribes on one particular continent was scarcely sufficient to warrant the general induction that the drum originated all the world over as a signal, if, indeed, it was correct to assume that, even in the signalling district, it so originated. Signalling looked much more like a practical afterthought than an original use, and certainly presupposed a much higher degree of intelligence than is attained by those tribes that are as yet in the drum stage. Besides Africa there was only one other instance of the signalling use that he knew of, and that was among the Yucunas of the Yapura.

In reply to some objections taken to the description of the lyre in his paper as "ushering in harmony," Mr. Rowbotham remarked that he used the word harmony in its simplest sense, understanding by it Aristotle's *ἁρμονία*, simple unison or octave between a voice and an instrument. Harmony is merely accompaniment, and was impossible in the pipe stage, for the pipe bound the mouth. But the lyre set it at liberty, and enabled the player to sing and play at the same time. Accompanying the voice by the drum was not melodic accompaniment, and need not be taken into consideration.

In conclusion, the author pointed out the bearings of the theory, if it were ultimately accepted, on the Cave Period. Whistles had been discovered in the caves, and if it were a necessity for the drum to precede the pipe, the cave men must have been acquainted with the drum.

A communication was read by the Assistant Secretary from Prince Paul Poutiatine, "On Neolithic Implements in Russia." An abstract will appear in the Miscellanea.

THE STONE AGE IN JAPAN; *with Notes on* RECENT GEOLOGICAL CHANGES WHICH HAVE TAKEN PLACE.

By JOHN MILNE, F.G.S., &c., &c., of the Imperial College of Engineering, Yedo, Japan.

[Read 25th May, 1880.]

PART I.

INTRODUCTION.

SINCE early times when Marco Polo journeyed across Central Asia and brought back news about the gold and pearls of a distant

country called "Chipangu" European interest in Japan has been continually growing greater.

Twenty years ago a lacquer box from Japan was a valuable "curio," and a note about the customs of its inhabitants a literary prize. Since then, although the period is so short, Japanese curios have been shipped to all quarters of the globe, and so many observers have been in the field transcribing books and noting customs, that now neither the productions, the customs, nor the history of Japan are sought after with the same eagerness as formerly.

Interest in that which is easily attainable seems to have reached a climax, and instead of being content with filling up the details of the sketch of historical Japan, enquirers are already in the field endeavouring to dispel the gloom which like a curtain hides that which is beyond the pale of written history, from the present in Japan, as it does in other countries.

As I have had unusual opportunities during my residence in Japan for travelling through the greater number of its provinces, my chief object in the following paper is to add the few gleanings about the archæology of Japan which I have gathered together during these journeys to the mass of information which has already been collected about this interesting subject.

For the purpose of connecting together the notes and placing them before my readers so that it is possible for them to be reasoned upon, I will now and then supplement what I have to say with information drawn from museums, from Japanese books, and from notes in local newspapers.

Sources of Information.

Many facts relating to the early history of Japan are to be drawn from its *shell heaps* or "kitchen middens," of which in some portions of the country there seems to be no lack. As the Japanese fishermen of the present day also make shell heaps, in many cases it may be difficult to distinguish between those which are modern, and those which are really ancient.

Tumuli afford another source of information. These exist in many parts of the country, but thus far only a few of them have been explored.

Natural and artificial *caves* have yielded valuable evidence about the early inhabitants of Japan.

Besides evidence derived from sources such as these, a study of the language, the names of places, the types of people which are met with, their customs, religions, and traditions, the geographical positions of the several islands which form Japan, &c., all have an important bearing upon the early inhabitants of

this country, and form valuable material to sift for information.

*Kitchen Middens.**—These are scattered over the country in various parts. In the neighbourhood of Yedo there are many, and I have seen them in Hakodate, and as far north as the extreme north-east end of Yezo; that is to say, between latitudes 35° and 44° north, or a distance of 700 miles.†

These middens, so far as I have seen, are all very similar in character. First there is a layer of earth from a few inches to 1 or 2 feet in thickness; beneath this comes a band of shells, all of which have been opened, and many of which are broken. This is generally of a thickness varying between 6 inches and 3 or 4 feet.

The chief features in all these heaps are the shells; in fact, it is by the shells that they are gradually being discovered.

In the heaps I have found the following genera, all of which seem to be similar to the shells living in the neighbouring sea:—

1. *Mya Arenaria.*
2. *Cardium.*
3. *Nerita.*
4. *Ostrea.*
5. *Arca.*
6. *Cerithium.*
7. *Turbo.*
8. *Buccinum.*
9. *Trochus.*
10. *Pecten.*
11. *Tellina.*
12. *Pyrula.*
13. *Artemis.*
14. *Murex.*
15. *Cytherea.*

From the two first of these shells we can infer that the taste of the present Japanese and that of their predecessors was very similar.

Bones.—In addition to the shells, it is very common to find fragments of bones. So far as I have seen, these seem to have been chiefly broken transversely, and if I except the heaps at Omori and Suyeyoshi, it is only in a few cases that I have observed bones which have been split longitudinally, as if it had been the intention to extract marrow from them.

The bulk of the bones which I have obtained are those of deer, bear, birds, and fish.

Some of the tusks of boar are remarkable for their large size, that is, as compared with those of their modern repre-

* The only kitchen midden which has yet been described is, I believe, that discovered at Omori by Professor Morse (*see* "The Popular Science Monthly," January 1879, p. 257).

† Since writing the above I have been told by Mr. Lyman, who has been travelling in Kiushiu, that he there met with kitchen middens. Details of these I do not know. But this occurrence in Kiushiu indicates to us that we may expect to find kitchen middens throughout the whole of Japan.

sentatives. This diminution in size, it has been suggested, may be explained by supposing that in olden times these animals lived in the plains where good food might be easily obtained, whilst now through the advancement of civilisation, and the populating of the low fertile ground, they have been gradually forced back into the wilder and more mountainous regions, where life is altogether harder, and food more difficult to obtain.

The most singular discovery which has been made, is at the Omori shell-heap near Yedo by Prof. Morse, who there found a large number of human bones, all of which are broken in the same manner as the other bones. Amongst these there are fragments of the humerus, radius, ulna, lower jaw, and parietal bones.

Prof. Morse says: "Of 16 long bones of the arm and leg, 9 are destitute of both extremities, and of the remaining 7, 3 are destitute of the lower extremity, 2 of the upper extremity, and in 2 the articular surfaces of both ends are gone."

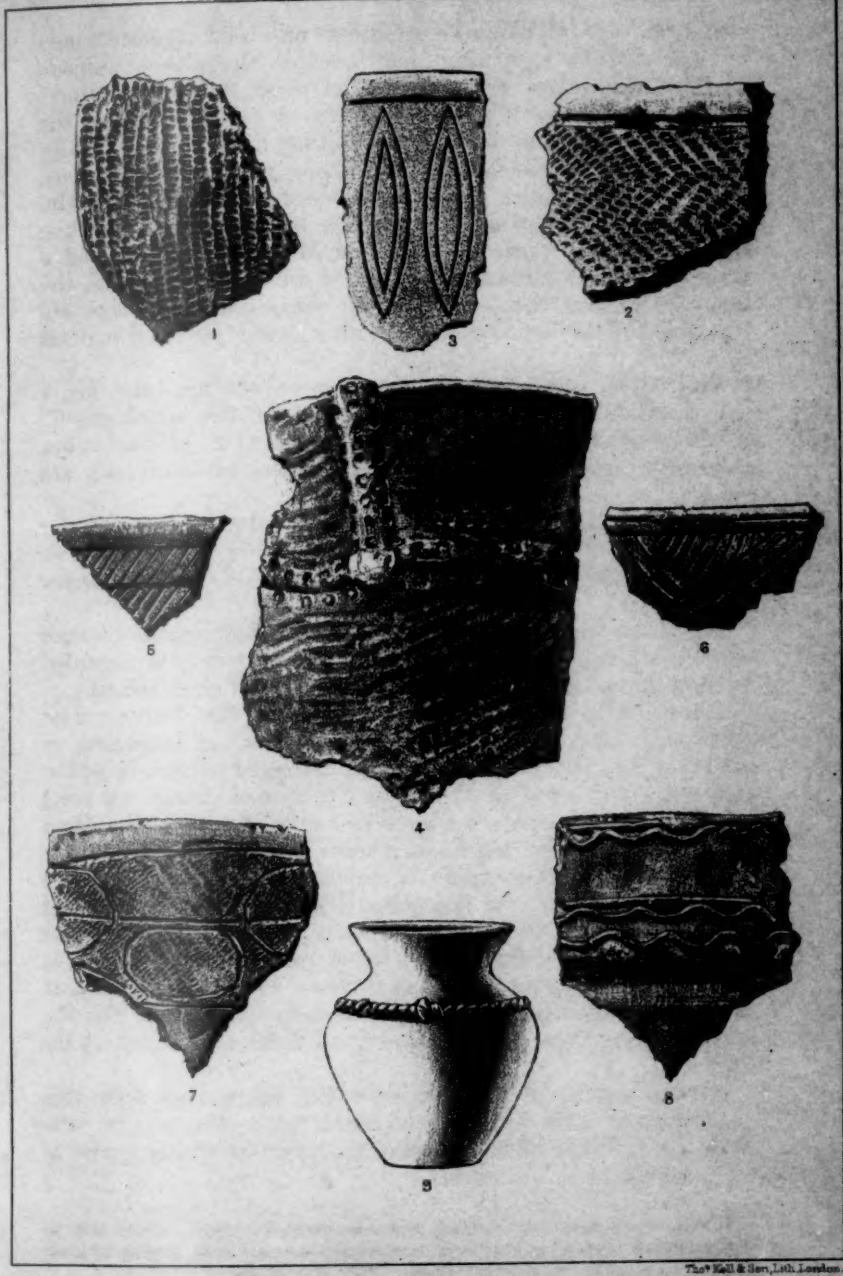
Only one tibia was found. Taking the antero-posterior diameter as 100, the transverse diameter is 62, and it "may be looked upon as a fair platycnemic tibia." (*Tokio Times*, January 18th, 1879.)

All these bones were mixed in an indiscriminate manner with the other remains. Finding bones in this way is regarded by Prof. Morse as being undoubted evidence of cannibalism.

Pottery.—In all these ancient middens, the feature most prominent, after the shells, is the abundance of fragments of pottery, all of which have apparently belonged to vessels of the vase type. At some of the heaps like that of Omori in a short afternoon you may collect a large basket full.* From the large quantity which are found at Omori, Prof. Morse is led to believe that in ancient times it may have been a famous place for its manufacture. In this belief I should hardly be inclined to join with Prof. Morse, partly because, as he himself says, that no unfinished specimens were found, and partly because at many other heaps, as, for instance, those near Yatsingashira, at Hakodate, fragments appear to be equally abundant. On the accompanying Plate XVII some typical forms of this pottery are shown.

As the nature of the patterns which are worked upon this pottery form such important evidence as to the people who made them, I will here state the few characters which appear to me to be the most observable.

* These fragments are unglazed and only partially baked. They vary in thickness from $\frac{3}{16}$th to $\frac{1}{4}$ of an inch in thickness, and are very similar in their general character to the pottery obtained from other heaps.



Thos Kell & Son, Lith. London.

ANCIENT POTTERY FROM JAPAN.

Impressed Markings.—The greater number of pots are covered with minute irregular punctations. These are about one-eighth of an inch in length, and are ranged in lines (Fig. 1, Pl. XVII). Other punctations are irregularly oval in shape. These are not arranged in such continuous lines as the smaller markings. Usually they are about one-eighth of an inch long, but sometimes they reach half an inch. These little impressions at times give a hatched appearance to the surface of the pots. In some cases it would seem that they might have been formed by pressing the clay whilst in a soft state upon a coarse cloth. At other times when this hatching occupies a peculiar position, or is worked into a pattern, it would be suggested that a milling tool of some description has been used.

Besides punctated impressions which entirely cover the surface of a vessel and give to it a peculiar grain, larger punctations are put on in lines. These are evidently for the purpose of ornament. It is common to find them in single or double lines round the neck of a vessel. Sometimes they are roughly triangular, at other times they are either rectangular or circular.

In one specimen of pottery which I have, the impressions are deep and are arranged to form a pattern like Fig. 2. This piece has evidently formed the upper portion of a vase.

Incised Lines.—These are narrow lines which look as if they might have been made with a piece of stick or the edge of a sharp flint, whilst the clay was soft.

Often they run in lines round the neck of a vessel, sometimes singly and sometimes two or three together to form a series of parallel rings. At other times they are like irregularly formed deep scratches. Occasionally not only do they run round a vessel but they are arranged obliquely to each other to form a pattern, as, for instance, in Fig. 6.

The spaces between two such rings are occasionally filled in with diagonal lines (*see* Fig. 5).

A zigzag pattern made of scratches arranged in series which have different directions are common.

The general figure they produce is like Fig. 2.

Sometimes these incised lines form a series of vertically placed elliptical forms down the sides of vessels, each elliptical figure being formed of two, three, or more lines (Fig. 3).

Roughly drawn ellipses are also cut round the vessel, as in Fig. 7. Rough scrolls are now and then met with, and various other patterns are also to be found. Besides, straight wavy lines running down the sides of vessels are to be met with.

Markings in Relief.—Those markings which are in relief consist of small knobs, occasional scrolls, and what are called

cordmarks. These latter are so called from their resemblance to fine pieces of cord. From what I have collected they appear to be of two kinds, the simple cord and the twisted cord. These generally run in single or double lines round the neck or the upper part of vessels. Sometimes two are laid on like two pieces of string loosely twisted together. At other times they form wavy lines, and the straight cords and the waved cords may be arranged to form various patterns, as in Fig. 8.

Here and there along the twisted cord markings little excrescences stand up as if they were intended to indicate a knot. The rarest form of these markings appear to be the scrolls. Those which I have seen are arranged either in circular shapes, or else in forms like the letter S or the figure 8.

Out of all these various markings and their variations, the dotted impressions and roughly incised lines are the most common, and of the patterns those formed of series of parallel oblique lines like the zigzags.

I may mention that the cord-marked pottery appears to me to be more common in the Yezo heaps than in those near Yedo, and also that in all cases the markings are extremely irregular and indicate a carelessness in their production.

General form of Vessels.—Judging from the shape of the fragments of pottery which I have gathered together they seem all to have formed portions of vase-like vessels.

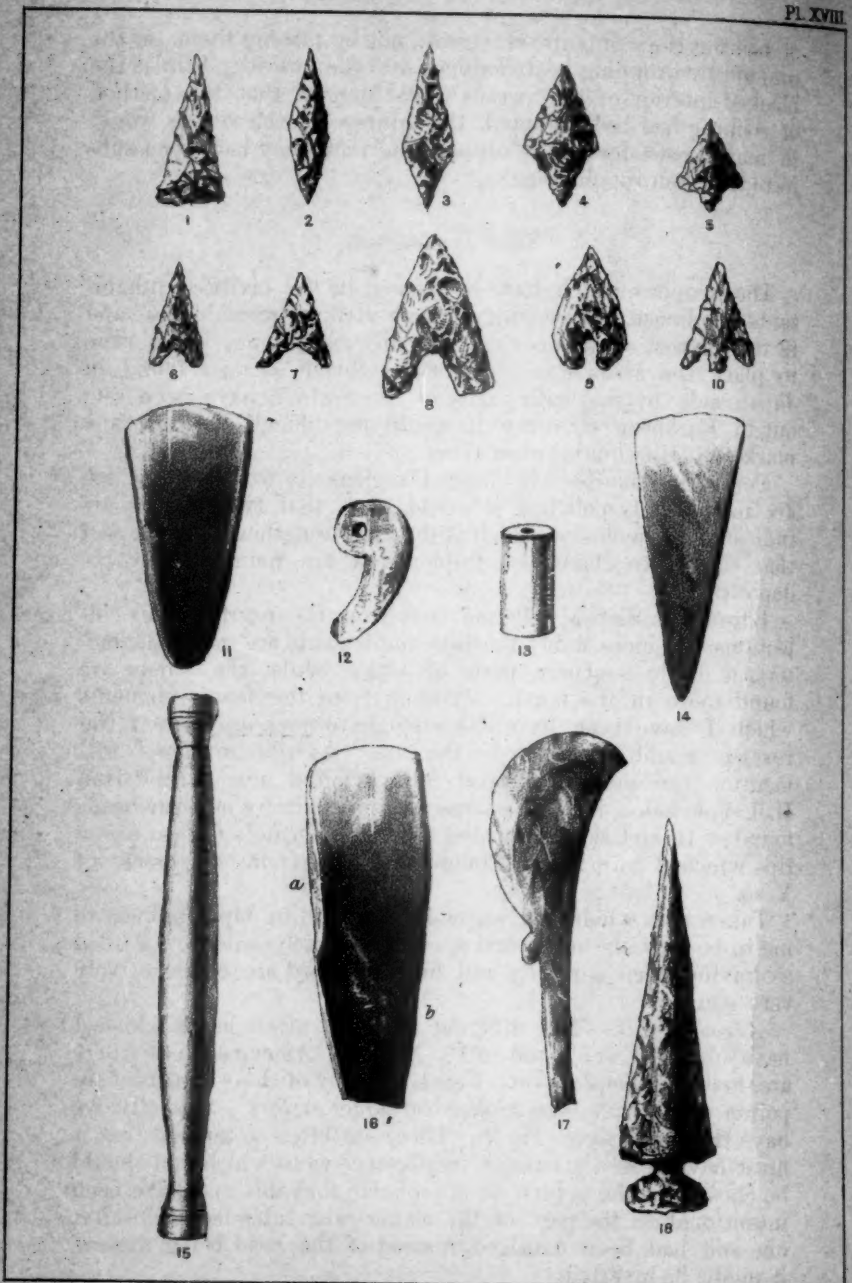
A complete vase which I had the good fortune to exhume when in Nemoro was shaped like Fig. 9. It is 130 mm. high, 85 mm. broad at the mouth, and 55 mm. broad at the base. It has a single cord mark round it, just below the neck.

From the Otaru heap a vase with two necks was dug up.

In some cases pieces of pottery have been perforated. These perforations are conical from two sides, indicating that a rhymer had been used first from one side and then from the other, very suggestive of holes which might have been bored with a flint flake. Amongst the many hundreds of fragments which I have collected, none of them show any trace of having been formed on a wheel, but from the irregularities, their shape, the finger marks, and the internal vertical scraping, they seem to have been moulded by hand.

Most of the vessels are of a dirty yellow colour, and do not show any signs of ever having been exposed to fire. Others are blackened as if by burning. This blackening in many specimens is only on the inner side, whilst the outer surface does not show any such indications.

From many rounded stones, some of which from their bleached appearance seem to have suffered from the action of fire, it would seem that we have indications of processes of cooking or



Thos Kell & Son, Lith. London.

STONE IMPLEMENTS FROM JAPAN.

of heating the contents of vessels, not by placing them on the fire, but by dropping heated stones into the interior. Whilst the blacked interior of the vessels would suggest that this method of cooking had been adopted, the thinness of the vessels would in many cases forbid the supposition that they had been subjected to such rough usage.

Stone Implements.

The weapons which have been used by the civilised inhabitants of almost every country have a striking resemblance, and in this respect Japan does not offer any exception. If we were to place the arrow-heads and stone chisels or axes found in Japan side by side with many of those which have been dug out in European countries it would be difficult to draw any marked distinction between them.

Comparing the roughly chipped implements with those which are more finely polished it would seem that two periods are indicated, a conclusion which is further strengthened by the fact that these two classes of implements are found in separate deposits.

Baron von Siebold tells me that from the result of his collections the more finely finished implements are more characteristic of the southern parts of Japan, whilst the coarser are found more in the north. Judging from the few implements which I have been fortunate enough to pick up myself, the reverse would appear to be the case. As illustrations I will mention the coarsely chipped celts I found near Macpherson Hill, Yokohama, and the coarsely chipped arrows or spear-heads found at Hakodate as compared with the delicately formed arrow tips which I gathered at Nimero, in the extreme north-east of Yezo.

Taken as a whole, the arrow-heads found in Japan appear to me to be coarsely made, and specimens which could be regarded as having been carefully and finely chipped are comparatively very scarce.

Arrow-Heads.—The different forms of arrow-heads which I have observed are given in Pl. XVIII. Amongst these there are, first, the *simple points* (Fig. 1). Many of these I suspect are points which have been broken off larger arrows. Secondly, we have the *lancet form* (Fig 2). These are often so tapered that it must have been a matter of indifference as to which end should be chosen for the point. It is probable that this may have been intentional on the part of the maker, who intended that after one end had been damaged, instead of the head being useless, it might be inverted.

These merge through *lancet diamond* forms like Fig. 3, into the *diamond* shape shown in Fig. 4, which in turn merges into the triangular form with a single *tang* as shown in Fig. 5.

These five forms I regard as being variations of a single type which is characteristic of the north. My reason for so doing is because these shapes (in the specimens which I have collected in Yezo) form a graduating series; and although the form of Fig. 2 is vastly different from Fig. 5, yet between the two there are so many connecting forms that it is impossible to tell where to divide the series. Also I may add that at Nimero I dug up specimens representing the whole of this series lying side by side. The probability is that the explanation of the different shapes is that the maker followed the general form which he obtained from his first flake.

My reason for considering these forms characteristic of the north is because I have only found forms like these in the north, whilst the few specimens which I have gathered or seen from localities farther south are nearly all like those shown in Figs. 6 to 10.

These are of two types. 1st. Those with two barbs formed by the base being hollowed out to form a crescent-shaped opening. Sometimes the entrance to this opening is very wide, as in Fig. 7, whilst at other times, as in specimens from Sado, it is contracted (Fig. 9).

As I have not seen specimens of arrows with these two classes of openings from the same locality it is possible that they represent local varieties.

2nd. There are the varieties with the central tang and two barbs (Fig. 10).

Baron von Siebold tells me that he has found a third type of arrow. This has a rounded blunt top, and he thinks it probable that it may have been used for stunning animals, like the arrows which are used when hunting the sable in Kamschatka.

Of course it is possible that the different types which I have described represent different stages of advancement, but for my own part I should be inclined to think, as I have already expressed, that they represent local varieties, those with a hollow base being found more in the south whilst the others occur in the north.

In order to give some idea of the relative sizes of these arrow-heads and of the nature of the material from which they are formed and the localities where they occur, I give the following as samples from my collection. The length and breadth of the specimens are given by fractions; the numerator representing the length in millimetres and the denominator

the breadth. The shape is given by reference to the figures in the plate.

Yezo, Nemuro.—Types Figs. 1, 2, 3, 4, and 5; Fig. 1, $\frac{3\cdot2}{8}$; Fig. 2, $\frac{3\cdot8}{13}$; Fig. 4, $\frac{2\cdot3}{14}$; Fig. 5, $\frac{1\cdot8}{11}$.

Hard grey slate. Other specimens are of yellow or red jasper, whilst others are of obsidian. Similar types have been collected near Cape Yerimo, near Otaru, and near Hakodate. The thickness of these is about 3mm.

Nipon, Owari, Kasugai-gori.—Types Fig. 7, $\frac{2\cdot5}{2\cdot0}$; Fig. 9, $\frac{2\cdot5}{2\cdot0}$. Material: chert, chalcedony, and agate. It will be seen that some of these are short and broad whilst others are long and thin.

Ise. Asakagori. Type Fig. 7. $\frac{1\cdot8}{1\cdot2}$; material, obsidian.

Ise. Kuwanagori. Type Fig. 11, $\frac{4\cdot0}{8}$; material, black flint. These are very rough and somewhat lancet-shaped.

Noto. Hagni-gori. Type Fig. 7, $\frac{2\cdot1}{1\cdot5}$; material, chert. The opening below is very flat.

Mino. Kamogori. Type Fig. 11, $\frac{5\cdot2}{2\cdot0}$; material, pitchstone. These are thick and rough.

Omi. Sakatagori. Type Fig. 11, $\frac{8\cdot0}{3\cdot0}$; material, black flint. These are very roughly chipped.

Omi. Inngamigori. Type Fig 7, $\frac{4\cdot5}{1\cdot5}$ and $\frac{2\cdot3}{2\cdot0}$; material, chert. The latter are almost triangular.

Sado, Kamogori. Types Figs. 8 and 9, $\frac{4\cdot0}{2\cdot0}$ and $\frac{2\cdot8}{1\cdot8}$; material, agate and chalcedony. These are broad, flat, and thin.

Other provinces in which arrow-heads are found, as given by Dr. Geerts, are Yamato, Mikawa, Totomi, Hitachi, Hida, Shimotsuke, Mutsu, Ugo, Yechigo, Hoki, Idsumo, Sanuki, Hizen, and Higo.

From this it will be seen that flint implements are to be found over the greater part of Japan.

Besides the small arrows which I have described, larger ones, like Fig. 18, are found. It is possible that these larger forms were used for spear-heads or knives: the larger portion of them to prevent their being broken was buried in a wooden shaft or handle.

I may remark that where the arrow-heads are found large numbers of flint flakes and chips are often met with.

Axes.—These are chiefly polished and rounded in outline. The material of which they are formed is a greenish stone, which in the specimens I have examined appears to be a partly decomposed trachytic porphyry or andesite. From this decomposition hornblende or augite has been partially converted into chlorite, and thus the greenish characteristic colour. I have seen specimens from Otaru in form like Fig. 14. Fig. 16 represents an axe which was dug up at Hakodate, and which

is now in the possession of Captain Blakiston. It is 373 mm. long, 83 mm. broad at the sharp edge, which is curved, and 38 mm. broad; at the opposite end the face is flat, and the other slightly curved. It is about 35 mm. thick. For several inches along its edges it has been slightly hollowed, these hollows being placed at points marked *a* and *b* in the figure, and not exactly opposite to each other.

On one of those faces there is a ridge looking as if it had been cut from a larger block by sawing a certain distance, and then splitting it off as a slab. This runs from the butt 243 mm. along one face. The cutting edge is rounded and sharp. The stone of which it is made is of a green colour, and is probably a chloritic metamorphic slate.

I mention this axe because it appears to be remarkable for its size. The largest axe mentioned by Sir John Lubbock in his "Prehistoric Times" is 13 inches long and $3\frac{1}{2}$ in breadth, whilst this one is $14\frac{3}{4}$ inches long.

Nearly all these axes have a curved cutting edge; some of the cutting tools which I have classed amongst these axes were only three pieces of stone or slate sharpened to an edge from one side like a carpenter's plane. In other cases the edges are sharpened from two sides.

Scrapers, &c.—The commonest relics of the stone age of Japan are the axes and arrow-heads which I have described. Other implements which probably belonged to this period are various types of scrapers. These have usually a convex scraping or cutting edge. In some cases, however, this edge is straight, whilst in others it is concave. These two latter forms are, however, rude. The writer of the "Unkonshi," a book in which many of these implements are figured, regards these especial forms as having been fashioned to serve as arrow-heads.

These are from 3 to 6 inches in length, and from 2 to 3 inches in breadth.

It is very possible that some of these may have been used as axes. They are, however, exceedingly rough.

Others may have been used as weights for nets. To say definitely the purpose for which these stones have been employed is, however, a difficult matter.

All the weapons and implements which I have thus far mentioned are probably as old as the kitchen middens, many of them being found in them.

Stone Ornaments, &c., of more recent origin.

Besides the stone implements and weapons which I have described, a vast number of stone curios are to be found in the

archæological collections of Japan. As these would seem to be comparatively more recent, and in many cases to belong distinctly to periods which are historical, I will say but little about them.

Fig. 12 represents a small stone known amongst the Japanese by the name of *Maṣatama*. In shape they are somewhat like the curved canine teeth of many large animals. The end corresponding to the root of the tooth is rounded and usually perforated. In some cases these perforations seem to have been made from the two sides by means of a rhymer with a triangular point. Such a one I have in my possession.

These curiously shaped stones, which are generally about half an inch in length, are occasionally dug up, and examples of them are to be seen in almost every museum in Japan. From their appearance they are probably used as ornaments, and Baron von Siebold tells me that he has in his possession a chinese head-dress covered with similar ornaments.

I have not seen anything of this kind either amongst the Japanese or amongst the Ainos. Amongst the Kuriles I have seen small bone ornaments decorating the end of tassels of similar form.

These *magatama*, so far as I am aware, have not been found in the shell-heaps.

They have often been found in the interior of vases which have been dug up. They are made from various materials such as jade, serpentine, jasper, agate, steatite, &c.

The belief of several Japanese authors is that they were introduced from China, and that they were used as decorations for the gods. They are referred to several times in Japanese history. (*See* "The Micado's Empire," pp. 46, 53, 93, where references are made to them being used as decorations for the gods, and as being shown in ancient pictures as the decorations of noblemen, one of which is given.)

From these facts, together with the fact that many of them are made of jade, a mineral which is I believe as yet unknown in Japan, we must regard the *magatama* as being an ornament probably derived from China, and certainly historical. This being the case we need not be surprised that the stones have not been found in any of the kitchen middens associated with the stone implements which were used by people from whom we do not seem to have any written records.

Fig. 13 shows a cylindrical bead or *kudatama*. Such beads are from 1 to 7 centimetres in length, and pierced vertically.

It may be remarked that in order to drill the holes through stones like these, those who made them were probably acquainted with the use of metals. The mode of occurrence of these stones

is similar to that of the *magatama*. Some of them, instead of being cylindrical, are in shape like double pyramids.

Fig. 15 represents a cylindrical stone staff or club. At each end there is a knob which is often ornamented. The length of these vary from one to several feet. They were probably used as signs of authority.

It is possible that these may have been used by the Ainos, and may therefore be classed as being relics of the true stone age. I advocate this view because stones like these have been dug up in Yezo in the old camping ground of the Ainos.

In an elaborate manuscript work upon the Ainos written in the year 1800, which has been kindly lent to me by my friend Mr. James Bescett, of Yokohama, one of these stone clubs is figured.

The writer says it was dug up at Nemuro, and was in the possession of an Aino chief named Shokayo, who lived at Riururi, a mountain about 10 miles west of Shibetsu, in Kütapu. He then goes on to say that the Ainos of the present day have in their houses a stick, which in shape is very like this, called "Ukari," and he expresses his belief that this wooden Ukari represents a more ancient form of stone.

Fig. 17 represents a stone implement, measuring from 300 to 400 mm. in length.

As all of these compared with the implements before described are probably of recent date, and so far as I am aware have never been found in the kitchen middens or associated with materials which we know to have belonged to people who inhabited Japan before the present Japanese, I will pass them over. In several native books they have been described, and much of what may be said about them is to be found in "Les Produits de la nature Japonaise et Chinoise," by Dr. A. J. C. Geerts.

The following are some of the deposits with which I am specially acquainted.

The shell-heaps at Hakodate, Nemuro, Omori, and several near Yokohama and Yedo I have personally examined and collected from.

Hokodate.—From the vast number of flint chips and implements which are to be found at and near Hakodate it would seem that this locality must have been a favourite residence of these prehistoric people.

In the roads and lanes leading along and up the face of the south-east side of the mountain, on the face of which Hakodate is built, many obsidian and flint chips, together with a few roughly chipped arrow-heads, are to be picked up. These are best found after heavy rains.

Besides fragments like these near to Yatsugashira, at a height of about 20 feet above the marsh from which the sides of Hakodate mountain slope upwards, I dug out a number of roughly formed arrows, flint chips, and specimens of pottery. Covering the surface of the mountain at this place there is first a covering of grass and bramble.

Beneath this there is a black earth which as you descend becomes lighter and lighter in colour until at last, at the depth of about 10 feet, it is quite yellow. From the fragments of trachyte which this latter contains, it is evidently the result of the decomposition of volcanic ejectments.

In some places the black earth, the colour of which is evidently due to vegetable matter, instead of merging into this yellow subsoil, is interstratified with it, apparently indicating that there had been a series of volcanic eruptions; but between each there had been a sufficient lapse of time for vegetation to grow and form a soil. Imbedded in a series of layers like these, at about 8 feet from the surface, I found a band of shells about 1 foot in thickness. Mingled with these, which were soft and pliable, there was a large quantity of pottery and a few bones.

The pottery which is found in this heap when looked at generally is apparently undistinguishable from that found at Omori and many other places in the south of Japan. It is about a quarter of an inch in thickness, unglazed, and if baked, only very slightly. It represents fragments of vessels of different sizes and shapes. An interesting piece is represented in Fig. 4, Pl. XVII.

The chief markings on the vessels are cord marks, whilst the markings on the Omori pottery are chiefly incised lines.

The stone fragments are chiefly chips of flint with here and there an imperfectly worked arrow. All of these are very roughly formed.

From a number of excavations which were being made in the outskirts of Hakodate whilst building houses, laying out gardens, digging ponds, &c., I also picked up fragments of pottery similar to that which I have described.

In one of these excavations the large polished axe already described was found.

Several smaller axes about 4 inches in length have also been found. The faces of these are generally smooth and convex.

Temiya muru, near Otaru.—At this place, on the ground of Mr. Okumura Hiosuke, a large number of flint implements, arrows, and chisels, together with broken fragments of pottery are to be found in large quantity. Amongst these, two vases were found, one being of the form shown in Fig. 9, Pl. XVII.

One obsidian arrow-head was like Fig. 2, Pl. XVIII.

All were very roughly worked.

Murata.—At this place roughly chipped arrow-heads are found.

Horizima, near Cape Yerimo.—At the back of the town in the small paths, after a shower of rain, many arrows may be found, and in the cliff on the N.E. side of the bay there are bands of shells, and with them fragments of chipped flints.

Nimoro.—This is a recently established settlement at the north-east extremity of Yezo. It is situated on flat ground at an elevation of about 20 or 30 feet above sea level. Opposite to the settlement there is a small island about a quarter of a mile in length and 100 to 150 yards in breadth. At its highest point it is perhaps 30 feet above sea level. This guards the entrance to the open bay along the shore of which the present settlement is built.

On the top of this island, at a depth of from 1 foot to 1 foot 6 inches from the surface, I found a band of shells. This, where it was cut across by the face of a scarp, was 2 or 3 yards in length, and 1 foot in thickness.

Mixed with the shells there were many fragments of pottery, in appearance like that from Hakodate.

Amongst the fragments I dug up a perfect vase.

There were also many fragments of stone and arrow-heads. In most cases these arrows had been chipped from both sides, but in one or two examples the chipping was only upon one of their faces. These arrows were apparently made to suit the flake from which they had been cut.

There were also many stone chippings and also a few irregularly broken stones about the size of a man's fist on opposite sides of which there were two notches which may perhaps have been used as sinkers for nets.

The material of which they were formed was flint. In one or two cases obsidian had been used. Rolled specimens of obsidian were to be found upon the beach.

On the mainland upon the west side of the settlement I picked up one or two similar specimens.

Other persons have made similar collections here, and in the house of Mr. Yamieda, at Nimoro, I saw many specimens.

In conclusion, with regard to Yezo, I may say that it would seem as if it were strewn from north to south with the remains of stone implements. There is, in fact, an abundance which would seem to indicate that the stone age has not long been dead.

Omori, near Yedo.—The shell-heaps at this place are situated on and round the edges of somewhat ellipsoidal mound, which forms a rise overlooking flat rice-ground between it and the sea.

On one side this mound is cut through by the railway to show a section 2 or 3 feet in thickness, which is white with shells.

On another side the mound which is, perhaps, 100 yards in length, forms the side of a small hollow down which, at a distance of from 50 to 100 yards, there is a small stream.

I may here mention that these old kitchen middens or bands of shell, of which I have seen several beyond the bluff at Yokohama, are almost always situated near a small stream or rivulet which probably was the source from which these early people obtained their drinking water.

On the opposite side the upper part of the mound is almost on a level with cultivated ground which rises a little higher to form a small plateau.

The shells cover a great portion of this mound, and in some places they may attain a thickness of 5 feet.

The chief character in this heap is the shells (of which specimens of nearly all those which I have mentioned have been found), the pottery, which is chiefly marked with incised lines, and the split bones.

Suyeyoshi.—There are a number of deposits chiefly situated on the top of the bluffs overlooking the village of Suyeyoshi about 2½ miles distant from the Tsurumi railway station.

On the top of one of these bluffs or ridges, for a length of from 50 to 100 yards, there are vast accumulations of shells, some of which are from 3 to 4 feet in thickness. From the number and extent of these heaps I should be inclined to think that the Suyeyoshi deposits represent the remains of a village. The greater number of these deposits are situated quite on the edge of the hill which has here a sharp descent into a deep narrow valley, the bottom of which is at about the same level as the plain which extends from Suyeyoshi to Omori.

The pottery in these deposits carries more ornamentation than any I have met with in any other deposits. In one of the heaps I found a roughly chipped stone axe. The species of shells were similar to those found at Omori.

Mori, Mississippi Bay.—A heap which I visited at this place, in company with Messrs. Biscett and Pryor, was not carefully examined. It is situated on the bank of a small stream which runs into the sea at this place, and is almost wholly made up of shells.

Many other heaps or irregular bands of similar character are to be observed between this place and Yokohama.

Tumuli.—In many parts of Japan large tumuli, which from their shape and position are evidently of artificial origin, are to be met with.

With many of these traditions are associated, as, for example, the tumulus called "Yezo Mori," at Morioka. This mound is supposed to contain the bones of Ainos slaughtered by the General Tamuramaru.* Others are said to be the graves of chieftains.

On the summits of some of these trees have been planted.

Other tumuli again seem to be even without tradition, as, for example, Macpherson's Hill, near Yokohama.

This is 20 or 30 feet in height, and perhaps 50 or 60 yards in diameter. Whilst digging out the side of it my companions met with one or two roughly-chipped celts.

Along many of the country roads as, for instance, the Nakasendo, large tumuli are to be seen. So far as I could learn by enquiry, when travelling on that road in 1878, these appear to be either marks indicating the boundary between various villages or else they were indications of distance like our mile-stones.

The exploration of tumuli like these would probably be unprofitable, but others of which there are so many might yield valuable results.

Caves.—In many portions of Japan there are caves, especially in the limestone districts. Several of these near Jadotsu, in Shikoku, I explored. They were long and narrow. I did not find anything which told of their having been ever tenanted either by man or beast.

Besides natural caves like these, there are in Japan many artificial caves, as, for example, one not far from Totsuka, on the left side of the road leading from Yokohama to Fujisawa. This cave, which contains many passages and chambers, is cut out in a soft grey tuff, the characteristic rock of the neighbourhood. On the walls there are many Japanese inscriptions. This cave is probably very recent.

However, near Kumagaye a number of small caves or chambers have been discovered and partially explored by Baron von Siebold, who, from pottery and other evidence which he found, regards them as being undoubtedly of Corean origin. Similar chambers which may perhaps have been burial places are supposed to exist near Odawara. The names of places in these

* Tamuramaru was a son of Xaritamaru. During the year of Yinriaku (782–806) he was promoted to the rank of Ju-goi, and was made a general of the Imperial guard. After his promotion he proceeded as far as Mutsu or Oshiu where he conquered the tribes (whom the Imperialists of that time called Yebisu or savages) now known as Aïnos. After his triumph he was again promoted to the rank of Shô-sammi in the second year of Taidô (808).

In the second year of Konin (812) he died in his 54th year; and was buried in the village Awasumura in the county of Uji. (Odai-ichiran—Chronological History of Japan up to the present time.)

localities also indicate Corean occupation. That in former times there have here and there been colonies of Coreans settled in various parts of Japan is strengthened by the fact that a remnant of these colonies still exist in Satsuma.

They came over in 1598 as potters and settled in Kagoshima and its neighbourhood, where they may still be seen exercising the old art for which they were so famous.

For their history, *see* "The Korean Potters in Satsuma," by E. Satow (Trans. Asiatic Soc. of Japan, February 1878), where reference is made to several other colonies of earlier date.

In Japanese history it is stated that (*see* "Nipon ôdai-ichiran, or Annals of the Emperors of Japan") Kaibara Tokzin, the author of a history of the origin of the Japanese, cites in the place where he speaks of the first human habitation a passage from Souken, another Japanese writer, who says, "After the creation of the world men dwelt first in the open air, but being exposed there to the effects of the wind, the rain, and heat, necessity taught them to hollow out caverns in which they preferred dwelling, in spite of the dampness of the earth which caused them maladies." Souken adds that he has travelled through the whole of the empire, that is Japan, to examine the different localities. It is on the escarpments of the mountains, and above all in places most distant from towns where he found a great number of caverns. The interior of these were furnished with large stones. These caves had their openings from the southern side, and were generally composed of two or three compartments.

The better ones are in the province of Kawachi, near to the banks of the Fatorigawa, the foot of the mountain Ikomagadake, and also in the canton of Yamabenokori, in Yamato. All appeared to have been inhabited. . . . Kaibara Tokzin speaks of having travelled in the province of Chikuzen, and having discovered there many millions of caverns, disposed in groups varying from 6 to 20.

Natives of neighbouring villages explored them, and took the stones to form the foundations of their houses, drains, dams, &c.

All the caves were opened towards the south (therefore probably artificial).

It was first thought that they were used as tombs, but on examination Kaibara Tokzin did not find any bones, therefore he gave up this opinion and says that he is convinced that originally they were inhabited.

Besides the caves which I have mentioned, I may also mention the following:—

Miyazake, between the provinces of Kadsusa and Shimosa;

many of these are used as storehouses by the people. My informant, however, did not remember whether they are natural or artificial.

Shiba Nihonyenoki Borayo Kochô, Yedo, in the grounds of the Zempukuji Temple. Length unknown, but probably 250 yards (to the sea). This cave is said to be natural.

Enoshima Island.—Here there is a natural cave worn by the sea along the line of a fissure. In the interior there is at present a small shrine.

From what I have said about caves in Japan, although so far but little has been obtained from them, it is more than probable that they offer as wide a field for the research of the cave-hunter as caves do in any other country, and from them a rich harvest of facts relating to prehistoric times has yet to be reaped.

In concluding my remarks upon these stone antiquities, I may mention that in Japan many collections of them have been made, and much has been written.

The Japanese, who treasure everything that is antique, are by nature archæologists, and amongst them, if statistics could be made, I think we should find a larger number of persons who have a taste for gathering together that which is old and strange than we should meet with in any other country.

Unfortunately the archæology of Japan seems as yet to hold the same position to the archæology of Europe that modern chemistry does to alchemy, or astronomy to astrology; the science, although deeply studied, and containing in it, even as it stands, much valuable material, seems hardly to be yet aiming in the right direction.

Arrow-heads and celts are collected, wrapped up in silk, and are highly prized as curiosities of great value. The taste for collecting, however, does not end with objects such as these, and the archæologist brings into his collection stalactites, curiously formed concretions, and weathered stones, all of which seem to be ranked as freaks of gods or nature.

Notwithstanding the fact that much valueless material has been collected with that which is truly valuable, to one who had time to ransack the museums, of which both public and private there are a large number, and to gather together and then sift the vast amount of literature which exists upon these subjects, the results obtained would form a valuable prize.

PART II.

Comparison of the Markings on Pottery with the Modern Art of the Ainos.

I am told that a comparison between the modern art of the Ainos and the ornamentation which we see upon the pottery of the kitchen middens has already been made, the conclusion being that the two are very similar. Unfortunately I have lost the reference to the paper in which these comparisons are to be found.

However, as the materials which I have, for the purpose of making such comparisons, are those which I personally collected when amongst the Ainos, or exhumed from the kitchen middens, they are, in every probability, somewhat different from those which have been previously adduced; and I therefore venture to offer them as fragments of original material, in addition to those which have previously been given. First, I may remark that the drawings which I have given are those of fragments which are of common occurrence, and therefore it is very probable that the markings on them are typical of the art practised by those who made them.

Fig. 1, Pl. XVII, shows a characteristic surface which was given to the pots. As this was due to some process in the manufacture which was probably unavoidable, it must not be looked upon as having any connection with markings which were placed upon the porcelain for the purpose of ornamentation.

Looking at the other markings we see that they consist of lines and curves, forming geometrical patterns, a character which at once excludes the originators of these markings from any of the northern tribes like Esquimaux, whose ornamentation usually consists in the representation of animals.

From the general character of the ornamentation we should say it was of Polynesian origin, where geometrical patterns are so characteristic.*

From the markings on sheaths of knives, and various instruments and utensils, together with the embroidery on clothes which are used amongst the modern Ainos, we should say that they also were of a southern type.

Horizontal lines filled in with diagonal lines as shown in

* *See* "Origin of Civilization and the Primitive Condition of Man." Sir J. Lubbock, chap. ii.

Fig. 5, Pl. XVII, are exceedingly common in the carvings of the Ainos. The tatooing on the hands and wrists of the Ainos also consists of diagonal lines of this description.

The pattern shown in Fig. 6—that is, series of parallel lines either straight or curve, arranged in groups to slope in various directions, and used to fill up spaces between horizontal lines or corners—is also exceedingly common.

In modern Aino art there are many traces of their connection with the Japanese to be observed; thus you meet with the "Kiku-nomon" or chrysanthemum crest of the Mikado, also the "Tomoyemon," a crest composed of three coma-like figures.

In Fig. 2 a zig-zag pattern is shown. This is met with either in lines or dots. Patterns similar to these are also to be met with, as, for instance, in the carvings which are sometimes fixed upon the prow of their boats.

In addition to the patterns of pottery which I have given, a diamond form is not uncommon, an exact repetition of which is sometimes met with in their embroidery.

Continuous lines of scrolls are common carvings on strips of wood and on the lower edges of their coats. Lines of loops are often repeated, as are also the elliptical forms of Fig. 7.*

Another common series of figures amongst their designs are variations of the key pattern. These are to be seen as carvings, and also on the upper back parts of their coats. This class of pattern I have not yet met with in the pottery.

From these few examples which I have given, it would seem that the common patterns found upon the pottery are still common designs amongst the modern Ainos.

It may, of course, be argued that the style of ornament which has been here spoken about is common to the primitive art of many nations, and a key pattern is as characteristic of archaic art as it is of Aino. Nevertheless, if these fragments point to anything at all, it is likely that they point more towards the Ainos than they do to any other source, and this more especially when we remember that they are found on ground which we know to have been inhabited by the Ainos.

Historical and other evidence of Japan having been inhabited by the Ainos.

Before forming conclusions on the variety of archæological material which has been exhumed in Japan, it would be well to look to the history of the country. If we do this, we shall find

* Many combinations of these curved forms as, for example, the loops shown in Fig. 8, are to be seen on the carvings on the exterior of their wooden coffins.

that the originators of these materials were perhaps not so far outside the pale of historical record as at first sight might have been imagined.

From history we know that during the first century Japan was invaded from Kiushin by Jimmu Tennô, a man who is regarded as the first Emperor of the country. This was about the year B.C. 660.* The people with whom he fought are regarded by the Japanese as being Ainos, or as they were then called Ebisu, or barbarians. This is confirmed by the history of subsequent periods, which narrates how the Japanese warred against the Ainos until the end of the 12th century.

At the 4th year (A.D. 110) of the reign of Keikô-tenno, 12th Emperor, Yamatotake-no-mikoto, formerly called Ousuno-mikoto the Prince, invaded the eastern barbarians, by order of the Emperor, and made them surrender, and tranquilized the countries. These would probably be the people who lived near modern Yedo.

Previously it has been mentioned how these barbarians (or Ainos) were slaughtered by Tamuramaru in the eighth century.

Traces of this early occupation of the main Island of Japan by the Ainos is to be seen in the faces of some of its inhabitants, in the names of places, and in the language of the people, especially those in the north.†

It would, therefore, seem very probable that Ainos not only lived in Japan in historic times, but also in prehistoric times, and as we cannot compare the relics which are found with anything that is Japanese, it would seem that we should not be acting rashly if we ascribed them to the Ainos.

The chief objections which have been made to this conclusion are—

1st. The Ainos are not essentially pot-makers, and the art of pot-making when once acquired is never lost. This objection, which has been made by Professor Morse, is, I think, without any substantial foundation.

When I was in Yezo I made many inquiries about pot-making amongst the Ainos. Up the river, which runs into the sea at Nekap, Mr. Maries, a botanist, who has been travelling in that district, told me that at the houses of the Ainos he saw

* In Japanese history this appears to be an accepted fact, but whether it will bear a critical examination is as yet a matter of doubt.

† I am told by Japanese scholars that the change in the names as you travel northwards is particularly observable. For instance, you meet with the Aino words "bori," meaning a mountain, and "bets," a river as in Imabetsu; and what is more, these words terminating in consonants instead of vowels which are so characteristic of the Japanese names, become more numerous the farther you travel northwards. Indications of the former inhabitants are also often to be found in the Japanese names themselves, as, for instance, Ebisuminato, the harbour of the barbarians in Sado.

clay vessels, which, so far as he could remember, were very similar to the fragments which are now dug up, and also that he believes that in this district the Ainos still manufacture their own pottery.

To this I may add that several books written about the Ainos distinctly state that these people are pot-makers. The following is a translation from one of these books:—

"The iron vessels which are used by the Ainos are chiefly those which come from Japan. But in the interior, vessels which are made by the natives are used. The size of them may be large or small, and they are, on the whole, similar in their shape. One kind of earthen pot which is made by the natives, is about 6 or 7 inches in diameter. As shown in the figure, handles are joined to the inside of the pot on both sides, so that the ropes which are tied on to the handles may not be burned when the pot is suspended above the fire.

"As Rinzo (another writer on the Ainos) has described the making of pots in detail, we omit to say more here."

From this we see that the Ainos are still pot-makers, but what there is left of this art is only a remaining trace of an industry which was once more extensive. Because the Ainos are diminishing in number the demand for pottery has gradually become less; and, secondly, because the Ainos have daily become more and more connected with the Japanese, from whom they could obtain better and cheaper utensils than those they could manufacture themselves, are sufficient reasons to explain why the art has gradually been waning, and under exceptional circumstances like these, when we remember that the cultivated Venetians have forgotten so much of their art of glass making, and the Romans of their pottery, I see no reason why we should not find, now and then, an example of an art like pottery being entirely forgotten, whilst the evidence of the art, in the shape of broken fragments, remain to attest its former existence.

2nd. That these heaps show evidence of cannibalism, and that there is no record of such a habit amongst the Ainos.

In reply to this, all I can say is that, so far, the only evidences of cannibalism are those found by Professor Morse at one heap at Omori. Although diligent search has been made by several persons interested in these enquiries, amongst whom I may mention Baron von Siebold, Dr. Naumann, and myself, not only in the Omori heap, but in many others, not a trace of similar evidence as has yet been found. Is it not possible that these bones described by Professor Morse have been gathered together by accident in the particular portion of the heap which was examined?

If this is so, we must refrain, for the present, from forming any universal conclusions. Should it be found after further examination that Professor Morse's discoveries repeat themselves, all that we can then do is to conclude that those who fed on the shells also fed on human flesh;* and if the Ainos were the people who fed on these shells, it is probable that the Ainos once were cannibals.

Marco Polo shortly after, speaking about Chipangu (Japan), speaks about the islands in the sea over against Manzi, or the Sea of China, where he says about prisoners who cannot pay a ransom, that the man who has the prisoner, "summons all his friends and relations, and they put the prisoner to death, and then they cook him, and eat him, and they say there is no meat in the world so good" ("Travels of Marco Polo," vol ii., p. 209).

Whether Japan is here meant or not it is difficult to say. The probability, however, is that he refers to some of the islands further south, as, for instance, in Formosa, the inhabitants of which place, we know, are not above suspicion of having now and then displayed a taste for the human species.

If the Japanese were ever cannibals, it is in all probability so very long ago that all record has been lost.

When we consider that races which are sufficiently low to practice cannibalism are usually too low to keep records, it is not astonishing that this blemish on the character of a people, from which some of the most civilized of European natives do not seem to be altogether free, should very often be lost.

Professor Morse says, as the result of repeated enquiries, that not only were the Ainos "not cannibals, but they are reported as being so mild and gentle that murder was never known to have occurred. So monstrous a habit would certainly have been known and recorded, particularly in the painstaking annals of early historians." In reply to this, all that I can say is, that from enquiries made by myself amongst Japanese scholars, it is found that the Ainos, although so gentle at the present day, carry in their history traces of as ferocious a nature as is met with amongst the savage tribes of other countries. What should we think of a race who punished robbers by cutting off their feet at the ankles, and who, as a mild form of punishment, boiled the arms and sliced the noses of their victims ?† Pro-

* It may be possible that the makers of the shell-heaps were careless of the bones of their deceased friends, like some of the modern Esquimaux. Parry saw human bones in the middens of these people.

Sir John Lubbock, in his "Prehistoric Times" (p. 410), speaks of the indifference shown by certain of the Esquimaux with regard to the burial of their dead, and he says "they leave the human bones lying about near the huts, among those of animals which have served for food."

† For this information I am indebted to Baron von Siebold, and I may add

fessor Huxley says that in the "early ages of the world, the first impulse of man was not to love his neighbour, but to eat him." When we remember the primitive state in which we find the modern Aino, and then hear of the barbarities which, in times not far remote, he was capable of practising, it seems as if a slight step would be sufficient to carry the modern Aino back to a state of savagery, from which even the early inhabitants of Britain do not seem to have been exempt; and although we have no direct proof of cannibalism to bring against the Ainos, to suppose it possible that cannibalism may have existed amongst them in early times, is not a suggestion without foundation, and this more especially when we remember that the countries of the Pacific represent an area where cannibalism has in latter days been, as compared with other countries, at a maximum.

Coreans and Kamschadales in Japan.

From the undoubted fact that the Ainos were the predecessors of the Japanese in Nipon, it seems highly probable that the remains of which we have been speaking may be regarded as their spoor.

The question next arises as to whether traces are to be found of any other people besides those who have left so many monuments in the form of kitchen middens. This is to be answered in the affirmative.

Already I have given evidence of the existence of colonies of Coreans, a remnant of whom are to be seen plying their old trade, and still capable of speaking their old language in Satsuma.

To these I would also suggest that it is extremely probable that Japan had inhabitants not only coming from the south and west, but also from the north. There were Kamschadales, or Alutes.

that the modern Ainos have still a practice of punishing a man who is guilty of wrong by beating with clubs, which is at times, in an individual who is not strong, sufficient to cause death. This practice is called "Ukari" and in many of their houses I am told that the club, about 3 feet in length, which is used for this purpose, may be seen.

In the 9th volume of the "Hokute Kijiriaku" (an account of the northern savages), a long account is given of the massacre by the Ainos of more than 400 Japanese merchants, most of them being killed whilst sleeping. This savage slaughter, which was committed by a tribe called "Shamushain," appears to have been solely for the sake of plunder. It took place in July 1670.

In the "Yezo-ki" ("Record of Yezo") it says that it is not uncommon for an Aino to have six or seven wives. These wives do not live altogether but in various parts of the country. Should any of these women be violated the punishment inflicted upon the evil doer is to tear the hair from his head until not a single hair remains.

If we look at a map and see the chain of islands which connects Kamschatka with Japan, and then remember how the few inhabitants who yet remain upon them continually migrate from one of these islands to another, we see that the supposition is not beyond the pale of reason.

On the island at Nemoro there are a number of more or less rectangular pits. In most cases the sides of these have fallen in, so that they appear like rounded hollows.

Owing to the long grass which covered these at the time of my visit, I was unable to count their number, but there were perhaps twenty of them.

Groups of similar pits are to be observed at Hochishibets, and also between it and Hamanaka.

These pits were first observed by Captain Blakiston.*

When I visited the Northern Kuriles in 1878, I there had opportunity of examining many of the houses of the Alutes, and of a tribe of Kamschadales, who call themselves Kurilsky. The settlements of these people consisted of groups of half underground houses,—rectangular pits covered with a roof. One of the settlements which I saw in the Island of Shimushi was deserted, and many of the roofs had fallen in.

The similarity of these pits with those seen in Nemuro, suggested the idea that these latter might at one time have served as houses, and it is certain that if the deserted settlement which I saw at Shimushi was visited by some traveller 100 years hence, it would be extremely difficult to distinguish between it and many of the groups of pits which are to be seen in Yezo.

So far as the evidence goes, it therefore does not seem improbable that there was a time when these underground dwellers of the north extended much further south than they do at present.

When these Yezo pits have been carefully explored, further evidence may be adduced to substantiate this surmise.

Position of Shell-Heaps.

All the shell-heaps which I have seen are at a slight elevation above the present sea level. Thus, at Nemuro, although they are close to the shore, they are at a height of 20 or 30 feet above it. At Hakodate they are about the same height above the sea

* In a paper written by this gentleman in the proceedings of the Geographical Society, July 27, 1872, I searched in vain for a reference to these pits. In all probability this interesting and valuable information was struck out in the mutilation which this paper appears to have undergone in order to reduce it to the form in which it now appears.

level, but situated so that they overlook the marshy ground which at this place forms portion of the low peninsula which connects Hakodate Head with the mainland.

At Omori the heap is at about the same elevation, but situated at a distance of about half-a-mile distant from the present shore line. The same remark applies to all the other heaps in this district. As these ancient people who have left these relics behind them subsisted to a great extent on food obtained from the sea, it is very probable that when heaps like those at Hakodate and Omori were formed they were much nearer to the seaboard than they are at present.

This view is confirmed by the fact that all the fishermen of the present day live between these heaps and the sea, and the greater number of the modern kitchen middens of Japan, which are also made up of shells, are to be found near the shore. This being the case, it is probable that since the time when these heaps of which we speak were formed, either elevation or a filling up of the sea by the deposit of materials must have taken place, and of both these actions I think we have substantial geological evidence. As at some future time I hope to speak of both these phenomena more in detail, I will now only state the evidence I have collected in its briefest form.

Evidence of Elevation and Silting up in Yedo Bay.

The upper portion of Yedo Bay is extremely shallow—so shallow, in fact, that if you do not know the direction of the few channels which exist, it is extremely difficult to traverse it for several miles out from the shore, even if you are only in a small rowing-boat. Large ships cannot come up to Yedo, but have to anchor 5 or 6 miles distant from the city, at a distance of about 3 miles out from the nearest land. The general depths as given on a chart of this portion of the bay are from $\frac{1}{4}$ to 4 fathoms.*

The bottom of the bay is made up of silt and mud, identical in appearance with that which we see brought down by the muddy waters of the many rivers which enter it. These are large and,

* From Yedo going in a S.S.E. direction towards the middle of the bay you find the depths as follows :—

For the first	$2\frac{3}{4}$	miles,	a depth of from	$\frac{1}{4}$	to	1	fathom.
„ next	$\frac{3}{4}$	„	„	„	1 to	3	„
„ „	1	„	„	„	3 to	5	„
„ „	$2\frac{3}{4}$	„	„	„	5 to	10	„

At this point you are about half-way across the bay; the greatest depth is about 12 fathoms.

considering that their lower course is across the Yedo plain, generally appear to be heavily charged with sediment, and it is no doubt to them that we must look in order to find an explanation for the sediment which in places visibly accumulates even in the lifetime of an inhabitant. When measurements of the water which annually is poured into the bay by these rivers and of the vast quantity of mud which they carry in suspension have been made, it will in every probability be found that sediment is accumulating in Yedo Bay at a rate equal to, and may be even greater than, that which has been observed in many great rivers like the Nile or Ganges.

Not only is the bay being in this way silted up, but it is also probably becoming shallower by a rising of the land at several places round Yedo Bay. Pholas borings have been observed at heights considerably above the present watermark.

As one example of these I may mention borings in the cliffs in the eastern side of Mississippi Bay, near Yokohama. Another example I observed in the cliffs beyond Yokoska. These latter are about 10 feet above high water-mark.

These markings very clearly point to the fact that one of the last movements of the land near Yedo was an upward one.

Now, if we put these two agencies together, we ought in Yedo Bay to find evidence of a rapid encroachment of the land upon the sea.

That this is actually the case we need not go further than history and old maps.

Quite recently in the "Nichi Nichi Shinbun" (*The Times of Japan*) a reprint of an old map was given. The date of this was 1459. From this map we see that only 400 years ago the sea reached over many districts which now are land. Asakansa is on the seashore and much of Fukagawa is beneath the water

This encroachment was not only over the lower ground near Yedo, but also over the ground near Kanagawa, near Yokohama.

In history we read that junks came to Asakusa, now one of the most populous districts in the centre of Tokio,* and as a preservation of this fact a seaweed used as food by the Japanese is called Asakusa-nori, from the place where it was originally collected. In the Asakusa Library maps are given of the following dates: 1635, 1661, 1673, 1690, 1717, 1718, 1732, 1752, 1787, 1848, and recent ones. By comparing these together,

* It is said that at the time when many of the deep moats which intersect various parts of Tokio were dug, the material was used to reclaim a portion of the bay. These sections, however, show a truly stratified series and not a deposit which we should expect to find in land which had been artificially formed by the filling in of earth.

and also with the map of 1459, the gradual changes which have taken place may be learnt.

In the map of 1655 many of the chief features which exist in the city are to be recognised.

Thus the Ginza, and the first canal running parallel with it, are shown as being quite close to the bay, whilst at present the distance to the sea is at least 800 yards; that is to say, the land has advanced at this place at the average rate of about 3 yards per year.

In other parts similar changes have taken place, but apparently at a different rate.

That much of the lower portions of Yedo plain were in recent times covered by the sea, or else have been formed like a delta from the accumulation of mud, is seen from its geological character, and also from the numerous loosely stratified beds of shells it contains, all of which, so far as I can judge from a number which I have collected, do not appear to be different from those now living in the bay.

As examples of the structure of the low ground near Tokio, I give the following sections obtained from borings near the Naval College:—

I.

	ft.	in.
Alluvium	7	5
Mud..	14	5
Mud and shells	17	0
Compact clay	25	6
Sand..	30	0
Mud and sand	39	2
Compact sand	44	0
Sandy clay	46	3

II.

Alluvium	5	4
Mud and shells	7	4
Mud..	12	9
Sand..	14	1
Mud and sand	16	2
Compact sand clay	17	7
Compact clay	22	4
Sand compact	25	1
Compact sand	31	1

III.

Alluvium	7	0
Mud..	10	0
Mud and shells	20	3
Compact clay	25	8
Compact sand clay	30	6
Compact sand	32	6

IV.

Alluvium	8	2
Mud..	23	3
Compact clay	28	8
Compact sand	30	6

The beds of mud which are mentioned are extremely soft, and altogether like that which forms the bottom of the bay.

Evidence of Elevation in Yezo.

Round the greater portion of the coast of Yezo there are long lines of terraces or old sea cliffs. Many of these have a steeply sloping face. They are usually about 20 feet in height, and are long and very regular.

In many places they are so prominent that they cannot fail to attract the attention of every visitor.

I have chiefly observed them near Hakodate, round Volcano Bay, and on the south part of the west coast, but they exist in many other parts round the island.

The terraces near Hakodate seem to be of marine origin, and Mr. B. S. Lyman suggests that they may have been formed when the sea between Yezo and Nipon was a closed basin in which the water was standing successively at different heights. (*See* Prelim. Report "Geological Survey of Yezo," p. 16, by B. S. Lyman, 1874.)

If the water between Yezo and Nipon ever existed as a closed basin, the sea must either have washed its barriers away, or else subsidence must have taken place. If barriers ever existed, it is probable that traces of them should yet be indicated upon charts.*

If we look at a chart we see that the shortest distance between Nipon and Yezo is about 11 miles, and the greatest depth is 120 fathoms; and no soundings seem to indicate the former existence of a barrier. Nor do I think that any former land connection, such as the closed basin would imply, has been removed by subsidence.

If we compare the flora and fauna which exists in the two sides of these straits we find in the southern portions of Yezo the woods almost wholly composed of hard wood, whilst in Nipon conifers are abundant.

This is a great distinction, but it is so evident that it is remarked by almost every visitor.

In Nipon we find a sheep-faced antelope or goat, a monkey, and a black bear, none of which exist in Yezo.

In looking over the list of birds published by Captain Blakiston and Mr. Pryer (*see* "Ibis," 1878, pp. 209–250), I observe that many distinctions are to be made between the avi-fauna of the two islands.

For example, the jays and woodpeckers are of different species.

In Yezo there is a birch grouse, which is not to be found in Nipon.

Ptarmigan are only found in Nipon, and the same may also be said about pheasants, which are not to be found in Yezo.

Looking, therefore, first at the depth of the channel between Yezo and Nipon, and, secondly, at the great differences existing between their fauna and flora, it is probable that it is a long time

* At the eastern entrance to the Tsugar Straits, which separate Nipon from Yezo, there is a depth of 102 fathoms; at the western entrance 67 fathoms; and 102 in the middle.

since the two were connected; and, therefore, rather than imposing upon ourselves the difficulty of explaining the existence or the disappearance of a barrier of land, it is easier to imagine the lines of terraces to represent so many old sea cliffs which have been produced during elevation.

If sediments have been deposited, and if elevation has taken place, it is now easy to understand the meaning of the positions which are raised above or lying back from the present water line, in which we find these ancient middens.

Evidence of the encroachment of the land upon the sea during recent years is to be seen in an old map of Niigata. Details of this map, which is in the possession of Mr. Troup, who at the time of m yvisit to the West Coast was Consul at Niigata, I have not been able to obtain. The encroachments, however, were so great as to attract the attention of the Local Government, who in consequence organised a fresh survey of the ground, in order to regulate the taxation of the farmers who in many cases were paying for a much less area than they actually possessed. In this map a great portion of the ground in which Niigata stands is represented as an island.

Parallel to the coast of Niigata, a line of sand hills seems to mark an old shore.

To a large extent all this encroachment of the land upon the water will be due to accumulation of sediment brought down by the Shinanogawa.

I may also mention that old maps of Osaka, one of which I have now in my possession, show evidence of similar alteration.

Evidence of this sort, which is obtained from all maps of places like Yedo, Niigata, and Osaka, shows that the land has been gaining on the sea. The raised Pholas borings at Yedo indicate to us that this has been partly by elevation. Accumulating sediment has assisted this action. At Niigata and Osaka we have only evidence of accumulating sediment. During this accumulation it is possible that elevation may have been going on, because the increase of land has been so rapid; but under no circumstances could we well suppose that depression had taken place.

Age of the Omori and other Middens.

Already I have given the rate at which the land has been gaining in the sea at one place in Yedo as being three yards per year. If I take a number of other points I obtain a series of results varying from a few inches up to four or five yards per year. Now, if I consider that these shell-heaps at the time of their formation were on the seaboard, and I measure the distance

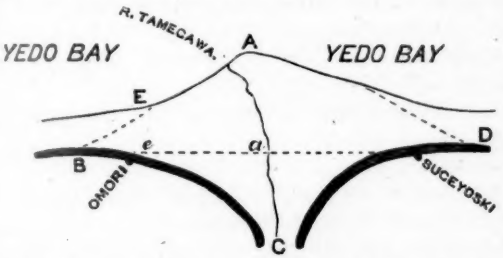
which they are now removed back from it, having a rate at which this material accumulated, I have the means of approximately calculating the number of years which have elapsed since the formation of these heaps.

The chief source of error in this calculation will lie in the manner in which the rate of increase is reckoned.

It would seem that the rate of increase must either be observed or else calculated for the line between each shell-heap and the sea. On every delta it is probable that the rate of increase along similar lines will follow the same rule, but the rule for any particular delta will depend upon special circumstances.

This I will illustrate by the Omori deposit, which lies on the edge of a delta formation at the mouth of the River Tamagawa.

Here the delta has the general form *A, B, C, D.* The thick curved lines *B C* and *D C* represent bluffs or scarp, which apparently mark the old shore line.



Since the delta reached the dotted line *B D*, the point *A* has advanced at a greater rate than any such point as *E*.

In fact the rate of advance along *eE* is to the rate of advance on *aA* as $\frac{eE}{aA}$ or $\frac{Be}{Ba}$ or $\frac{BE}{BA}$.

In other words, in all probability *eE* took as long to deposit as *aA*.

Now assume that *aA* was deposited at the lowest rate which I can with any accuracy determine for advance under similar conditions in Yedo Bay. This rate is two yards per year, and it is measured on the delta of the Sumidagawa.

As measured from a chart, $Aa = 6{,}160$ yards, and to form it at the rate of two yards per year, gives a period of 3,080 years.*

If I had been able to determine the rate of advance on the Tamagawa itself, which is a large river bringing down vast

* At rates of three, four, and five yards per year, the periods become respectively 2,053, 1,540, and 1,232 years.

quantities of sediment, the result would probably have been even less.

The period would also have been less if I had taken an average rate of advance, or in fact any higher rate of advance than the one which has been used.*

CONCLUSIONS.

From the facts which I have collected together in the preceding pages I am inclined to ascribe the origin of the greater number of the older relics, more especially those exhumed from the kitchen middens, to the Ainos.

My reasons for doing this are, first, we have historical evidence showing that in olden times, when the present Japanese came to Nipon, they found it tenanted by Ebisu or barbarians, whom they recognise as the ancestors of the modern Ainos.

Year by year the aborigines were driven step by step towards the north. About the year 800 they were struggling near Morioka, and by the year 1200 they seem to have been practically exterminated from Nipon, and those which remained or had taken refuge further to the north in Yezo were completely subjugated.

In early times, that is a thousand years ago or so, Ainos lived in the districts where the kitchen middens are found, and they still live where similar middens are found in Yezo.

It is therefore probable that the Ainos are the people who have left these traces behind them. This is confirmed by the nature of these traces. The pottery which is found in the middens is such as could be made by a barbarous people.

It does not seem possible, so far as I am aware, to identify it with anything which is Japanese, whilst its ornamentation is very like that of the modern Aino.

Then there are the stone implements. These also may have been Aino, stone implements having been used amongst the Ainos up to a period which is quite recent.† In confirmation

* From this we see that geological reasoning brings us to the conclusion that at a period—at the greatest estimate 3,000 years ago, and at the least estimate 1,500 years ago—the Omori deposit was on the seaboard. History tells us that about 2,500 years ago Jimmu Tenno came to Japan and fought against the Ainos. It is therefore very probable that the Omori deposit was formed about the period when we know from history that Japan was inhabited by the Ainos.

† In going through the museums in Yedo, amongst the flint arrows, the chisels, the *magatamas*, some of which are 6 inches in length, the circular stones with central depressions like "chipping stones," and other ornaments and implements, I have seen many old articles of bronze, as, for instance, spear heads. What the history of these is I do not know, but they probably indicate a period perhaps corresponding to our bronze age.

of this I may quote the following passage taken from a Japanese MS. book written in the year 1800. The writer, whose name is omitted, is describing the stone implements which have been found in Yezo. The subject of the book, of which there are many volumes, is the Ainos.

He says: "A chief called Shongo, of Nemuro, told me that in old times, when there were no cutting tools of metal, the people used stone tools. The stone they employed was called 'aji.' It is of a black colour. There is a sort of hard stone called 'ironstone,' which is also used. Even now tools of this description are used by those who dwell far in the interior."

Secondly, we observe that where heaps of shells like those forming the kitchen middens were formed, they must have been near to the sea, just as the modern heaps are; and if we turn to geological evidence, we see that, less than 3,000 years ago, heaps like those at Omori were in all probability on the seaboard, and that previous to such a period such spots like these, unless we imagine discontinuity in the working of the geological agencies, which we see at present, could not have been inhabited because they would have been more or less submerged.

Therefore the probability is that these middens were not formed either before or after the time when the place where they exist was inhabited by Ainos.

History and geology support each other, and we are brought by them to the same conclusion, namely, that in every probability the kitchen middens of Japan are of Aino origin.

Beside the remains of Ainos, in the extreme north we find a number of pit dwellings, indicating a people who may have been Kamschadales or Alutes.

In the south, dotted about here and there, there are traces of Coreans, examples of whom still survive. The coming of the Coreans seems to have been in historical times, and subsequent to that of the people who are the ancestors of the modern Japanese.

Altogether, therefore, if we omit the Coreans, there seems to have been since the year 600 a migration northwards, brought on by the invasion of the Japanese advancing from the south.

This retreat towards the north seems to be similar to that which has been traced in so many parts of the northern hemisphere subsequent to the glacial period.

In Japan, so far as I am aware, there are no traces of glaciers even on the highest mountains. But from an examination of a large collection of shells taken from the alluvial deposits of Musashi made by Dr. Hilgendorf (formerly of Yedo), it would seem that there is an indication of its once having been colder in the neighbourhood of Yedo than it is at present, certain

species which he identified being now only found in the vicinity of Yezo.

To this I may add that I have seen jaws and teeth of fossil elephants obtained from the alluvium near Yokosuka.

These also may indicate a more southerly extension of the Siberian mammoths, and also a colder climate.

The northward migration of the Ainos and Alutes or Kamschadales is, however, far too recent to be ascribed to that of variation in climate.

In Europe it would seem from what Mr. Boyd Dawkins tells us in his "Cave Hunting" that the flint implements and other spoor we find in caves and gravels were left by a race which travelled northward over the moraines of retreating glaciers. Long after this we had again migrations, as, for example, in the fifth century, when the Gaelic-Celts were driven northwards by the advancing Danes and Saxons, and it is here, I think, we find a parallel both in time and manner of the migrations in Japan, which left behind them the spoor of which I have been writing.*

At some future time when more evidence has been collected our inquiries may, perhaps, go still farther, and we may, perhaps, discover the origin of the Ainos.†

These connecting channels are also frozen over. From this we see that there would be no difficulty for Japan becoming populated from Asia.

In order to learn something about the origin of the Ainos, we must study them as we have studied other nations. To an ordinary observer, from a physiological point of view, they do not appear to be connected with any of their neighbours. By some it is said that the Aino tongue holds an intimate relation with the Japanese, whilst others totally deny the assertion.

* If the Japanese come from the west it is, of course, quite possible that a portion of the early inhabitants which were formed in Kiushiu and the southern portions of the country may gradually have gone southwards, but of the exodus in this direction proofs have yet to be adduced.

I myself, however, should be inclined to think that the Japanese came from the south and east, in fact that they were of Polynesian origin. I venture this remark on account of the many similarities which are so very observable between the inhabitants of many of the Pacific Islands and Japan. It is needless to say that the origin of the Japanese is a subject which yet remains to be investigated, and what I have said is as yet only a suggestion.

If we look at a map we see that at the northern extremity of Yezo, the distance across to Sagahlin is only about 22 miles. Between Sagahlin and the mainland the distance is again very short (only 5 or 6 miles) and is so shallow that at low tide after certain winds you can walk dry shod into Asia.

† In Japanese history we are told the story about an Asiatic princess who, fleeing from her father, took refuge in a canoe, and in company with a dog was drifted to Japan. The result of this union were the hairy Ainos. Originally the Ainos were called Ebisu or barbarians, and the word Aino is by some said to be derived from the circumstance of the above story,—"Inu," which became corrupted into Aino, meaning a dog.

Subjects like these, together with those relating to customs, tradition, folk-lore, and the like, have yet to be investigated, before we can pronounce any verdict about the origin of the Ainos.

In conclusion, I beg to remind my readers that the foregoing paper by no means purports to be an exhaustive treatise of the subject embraced beneath its title.

Whilst giving a general outline of some of the more important facts connected with the early inhabitants of Japan, I write chiefly for the purpose of adding a few facts to the general store which I feel will very shortly be harvested.

From the vast amount of material, geological, archæological, and literary which remains to be exhumed, I see that it would be easy to spend years in continuing to examine new mounds, and in extracting from manuscripts and histories. However, from the little which I have so far gathered, and which I have now given, I think there is sufficient in it to connect together in an intelligible manner the outline of the history which has been given.

Several explorers are now in the field who have already collected together a vast quantity of material. When this is published it may modify many of my conclusions, but I trust my materials have been sufficient to maintain the general outline of the geological and ethnological changes which have taken place during the more recent periods in this interesting country of the "Rising Sun."

NOVEMBER 23RD, 1880.

ALLEN THOMSON, Esq., M.D., F.R.S., *Vice-President, in the chair.*

The Minutes of the last meeting were read and confirmed.

The following list of presents was read, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From Prof. F. V. HAYDEN.—History of North American Pinnepeds. By Joel Asaph Allen.

From the AUTHOR.—Les Nécropoles du premier age du fer des Alpes Françaises. Par M. Ernest Chantre.

—— Recent Discoveries in the Parishes of Chagford and Manaton, Devonshire. By W. Pengelly, F.R.S.

—— Notes on recent notices of the Geology and Palæontology of Devonshire. Part 7. By W. Pengelly, F.R.S.

From the ACADEMY.—Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg, T. XXVI, No. 3.

From the ASSOCIATION.—Journal of the Royal Historical and Archæological Association of Ireland, Vol. V, No. 41.
From the SOCIETY.—Journal of the Society of Arts, 1460, 1461.
—— Journal of the Royal Geographical Society, Vol. XLIX.
From the EDITOR.—"Nature," Nos. 576, 577.
—— Revue Scientifique, Nos. 20, 21.
—— Correspondenz-Blatt, Sept., Oct., and Nov., 1880.

The election of Dr. W. R. HUGGARD was announced,

The Director read a letter from Mr. Brian Hodgson referring to a collection of Nepalese native drawings, presented by him to the Institute.

It was proposed by Mr. Hyde Clarke, seconded by Mr. Walhouse,

> "That the cordial thanks of the Members of the Anthropological Institute, in public meeting assembled, be presented to their Member, Mr. Brian H. Hodgson, for the munificent donation to their collection of his drawings and illustrations of the Himalayan regions."

Mr. Howorth, Mr. Bouverie Pusey, and the Chairman spoke in support of the resolution, which was carried by acclamation.

The Director read a paper by Dr. Paul Topinard, entitled "Observations upon the Methods and Processes of Anthropometry."*

A discussion ensued in which Dr. Garson, Mr. C. Roberts, and the Chairman took part.

A paper "On the Origin of the Malagasy," by Mr. C. Staniland Wake, was read, upon which Mr. Keane, Mr. Howorth, and Mr. Bouverie-Pusey joined in a discussion.

The papers to be read at the next meeting were announced.

I. NEOLITHIC FLINT IMPLEMENTS *of the* NILE VALLEY *and* EGYPT. By R. P. GREG, F.G.S., F.S.A.

IT is only recently that flint implements, chiefly, however, *flakes*, have been noticed as occurring in Egypt, and notably at only two localities, viz., at Helwan, 15 miles south of Cairo, on the east side of the Nile valley, and in the Thebaid, on the west side; at the latter locality, first, I think, noticed by Sir John Lubbock (*see* a paper read before this Society by Mr. A. J. Jukes Brown, December 11th, 1877). During the last winter, spent on the Niie, I was successful in finding a number of other localities where worked flints, chiefly *flakes*, occur.

* *See* "Journal of the Anthropological Institute," vol. x, No. 33.

I append a list of these localities, found on either side of the Nile valley, occurring more or less frequently over a distance of some 400 miles, say from the Delta nearly to Silsilis, where the Nummulitic limestone, containing flint, ends, and the Jurasic sandstone takes its place.

Wherever flints of a suitable nature occur, either on the slopes of the desert and wadis, just above high Nile level, or on the crests of the nearest hills, there I believe, as a rule, flint *flakes* or *chips*, worked by man, may be found. Well-worked flints, as arrow-heads, knives, scrapers, celts, &c., are excessively rare; in fact, I hardly found any. Where water was so scarce, and the sun so hot, the flakers probably took their rough flakes to be worked up and finished at home, or on the banks of the Nile itself. *Scrapers* especially are not to be found, perhaps because, in a tropical climate, the skins of animals were not required for clothing. *Cores* I found, but by no means abundantly, and, except near Feshun, not of a very regular shape. I found a few small circular *saws*, as they are sometimes called, somewhat similar to those found in county Antrim, Ireland; a few *strike-a-lights* and spoiled *gun-flints*. It is only from Helwan that I have seen really well-worked flint tools; where *awls* and nicely worked splinters, with a few *knives*, *saws*, and *arrow-heads* have been found. Near Gebel Herréedee I found some very large heart-shaped flakes, possibly intended for spades, with large bulbs of percussion, not made out of ordinary flint, but of a hard, cherty limestone. I saw at Cairo a very pretty collection from Helwan, of about 700 specimens, chiefly, of course, flakes and splinters. In the museum at Boulaq there are a few specimens both of flint, stone, and bronze implements, including a fine *arrow-head*, but unfortunately the localities are not specified. I may say, as a rule, that the flint flakes, &c., found in Egypt are of two or three different periods; especially some of those found in or near the valley of the tombs of the kings (Bab-el-Molook) which have the appearance of great antiquity, and almost palæolithic; whilst many others close by have a much fresher appearance.

Flint flakes and splinters are very numerous in and about this valley, and on both sides of the rising ground and necropolis, on either side of the entrance to it, from the temple of Koorneh to some miles northwards. Flints may specially have been required at this locality for embalming purposes.

They are also common for an extent of some miles on the tableland on the east side, opposite Feshun, about 100 miles south of Cairo. As a rule, it may be said that the flakes now found in Egypt are rough and not large; the largest occurring near Feshun, and the smallest and best finished at Helwan, where

there are springs of water inland, some little distance from the river bank. It is very probable that the flint itself, in many places, is not of a good quality for working up. In some localities I noticed that the flints had been evidently split by the mere heat of the sun, but the fractures in such cases are readily distinguishable from those produced by human means. One particular form like small triangular or leaf-shaped (untanged) *arrow heads* I specially noticed, however, as having a very deceptively artificial appearance.

Not unfrequently I found many chips and a few flakes scattered round the very stone on which the flaker himself must have sat when at work. Generally, bits of rough red pottery are to be found, even in out-of-the-way places, where flint flakes occur, and which I have little doubt are often of the same age as the flint-workers. Judging by the appearance and nature of this pottery, as compared with that found about the sites and tombs of ancient cities, 1000–2000 years B.C., this is the conclusion I came to. I brought home a few sample specimens of this style of pottery. On the site of more than one old city, and notably at one near Gebel Sheykh Embarak, they occurred clearly on and over the old *débris* itself. About the graves and tombs and sites of the very old city of This, or Thinis, near Abydos, and at Koorneh, near Thebes, I occasionally found worked flints; but it was not easy to say whether they were necessarily of a date anterior or not to the tombs or cities themselves. On the platform of rock and desert, near Cairo, on which stand the great pyramids of Ghizeh, 4000 or 5000 years old, and much covered with the *débris* of stuff chipped from the stones for the pyramids, tombs, and temples, I could hardly find a single piece of flint of any kind, and certainly no worked ones; whilst all around in the real desert just outside there are millions of loose flints, and I found a few old worked ones (flakes). About the sites of the older pyramids and tombs of Maydoum and Sakkarah (3rd to 5th dynasties), I found few or no traces of worked flints, pointing rather to the conclusion that in the immediate neighbourhood of those very old historical monuments the flint-workers were of a time anterior to those early buildings, as are probably also the Helwan-worked flints on the opposite side of the Nile valley. Taking everything into consideration, I am of opinion that the worked flints and flakes of the Nile valley are mostly of an age both before and after the strictly historical period of Egyptian history, say 2000 years B.C.

It may here be stated that stone *celts* are of rare occurrence in Egypt, possibly arising from a very early use of bronze, which must have been of use 3000 B.C. at least. I heard of two grooved stone *maules* being found last year near the pyramid of Aboo-

roash, five miles north of the pyramids of Ghizeh. In the Boulaq Museum I think I only saw one or two stone *celts* or *chisels*. With respect to the mooted question as to whether the ancient Egyptians used bronze or iron for their chisels and picks employed in the quarrying and cutting of stone, I can throw little or no light. It is difficult to conceive how they could have quarried so extensively and so skilfully, as they certainly did, without the best-tempered steel tools. In 1823 the French found an old bronze chisel in the workings of the large sandstone quarries at Silsilis; and in the Museum at Boulaq there is an excellent and characteristic example of a stonecutter's chisel, with a squarish point (much blunted by use). Several bronze chisels, such as are used by masons, have also been found at Sarabut-el-Khadem, with worked flints, 12th to 18th dynasties; and bronze hoes at Tel-el-Khadem.* I believe no *iron* chisels have been found. I collected some of the dust and sand deposited in the clefts of the rocks, immediately under the numerous large scars or marks where evidently the tools were sharpened, with a view to its examination on my return to England, but I can find no traces of either bronze or iron-oxide amongst the particles in this sand with the microscope. Speaking of the *quarrying* of the ancient Egyptians, those who have not seen some of these old quarries can have a very poor idea of their enormous extent, or of the regular methodical way, step-like, in which they were cut, split, and worked; in most places every mark of the pick or chisel can still be as clearly seen as the day they were done. I believe they must have used picks with handles, as well as chisels and mallets. The tools evidently were often pointed, as well as in many cases half-an-inch to an inch wide at the cutting end. Where the rock is sandstone, the furrows or marks in the adjacent rock, made by the workmen grinding or sharpening their tools, are often to be seen in hundreds; where the rocks were of limestone, I did not notice any such marks.

I may here notice that *flanged celts* and palstaves, such as are found in Europe, have not that I am aware of been found in Egypt; which, if true, tends to show how completely the earlier Egyptians were removed from European influence and cultivation, or *vice versâ*, as it may be. The few celts I have seen in museums are flat, and not unlike the earlier type found in Europe and in Ireland especially. The bronze implements found in Egypt are, I believe, mostly knives, daggers, arrow-heads, and axes.

* Some ancient bronze mason's chisels, both from Egypt and from Assyria may also be seen in the British Museum.

A List of Egyptian Localities for Flint Implements.

Abou-Hamed, near Zagazig Railway Station, Delta.
Ghizeh and Helwan, near Cairo.
Feshun (east bank of Nile).
Gebel Sheykh Embárak (east side).
Gebel Herréedee (east side).
Sioot (five miles south-east side).
Gebel Toohk (near Girgeh, ditto).
Kasr-el-Syad (east side).
El Kab (east side).
This and Abydos (near Memphis, west side).
Dendera or Tentyra (desert, ditto).
Thebes (hills on both sides, chiefly, however, in and near Bab-el-Molook).

II. The Palæolithic Age in Egypt.

I found nothing in the way of stone implements having a decided or certain palæolithic character. I found a few doubtful flint flakes, and one apparently showing bulb of percussion in the undisturbed earth, at the necropolis of Koorneh, in the Thebaid; this earth consists of a *débris** formed of angular nodules of whitish limestone rock and flints; at some 10 or 20 feet above present high Nile level, and forming the earth in which the many tombs and graves round about, were excavated to a depth of some 10 or 15 feet.

Sir John Lubbock found, I believe, an undoubted palæolithic implement in a neighbouring valley; but I have not seen it. Some of the flint flakes in the valley of the Bab-el-Molook hard by, have a palæolithic character. I heard of a palæolithic implements being picked up last year by an American gentleman at the larger petrified forest near Cairo, but I have not seen any published description or drawing of it.

Palæolithic Implements, Dardanelles.

Mr. Frank Calvert, of Dardanelles, lately showed me several implements, one notably of quartzite, and two others of flint, undoubtedly palæolithic, and which he had found with quartzite, and other primitive boulders; the latter not unfrequently striated, and evidently of glacial origin. These boulders and

* Or deposited ages ago when the Nile was an estuary of the sea, and the land depressed some hundreds of feet below the present level, and consisting probably of detritus formed by the falling in of the adjacent ridge of hills or cliffs. Since this paper was written I hear that palæolithic worked flints have been found in undisturbed gravels near Thebes by General Pitt Rivers, at the tombs of the kings, some miles above Koorneh.

implements occur, dispersed along a ridge of meiocene formation, and have evidently been brought down from the mountains, some miles inland. This natural ridge at one time, has apparently formed one of the lateral margins of a glacial valley coming down nearly at right angles from the higher hills, to the strait of the Dardanelles. One of the implements of white quartzite is rough, as if it had not been quite finished, but is not water-worn. One of the others, very slightly water-worn, shows most distinctly the working on both sides, and is of the heart-shaped flatter type, like some of those from the gravel-beds of France and Suffolk. The height of the ridge where they occur is from 100 to 300 feet. Mr. Calvert also told me he had a year or two ago found, on the the northern side of the Dardanelles, where there was an old sea-level, about 100 feet above the present sea-level, a large well-worked flint flake, to which were attached small specimens of marine shells! thus undoubtedly proving the high antiquity of the flake itself. This specimen has been sent to Vienna for Professor Mayer's inspection, on its way to the Museum at Owens College, Manchester. R. P. G.

Mr. R. P. Greg exhibited several specimens of flint and bronze implements from Egypt and Greece; also an unusual form of bronze hammer-head from Dalmatia, *holed* like the stone ones from Scandinavia; also a bronze dagger from Egypt, with cartouches of Thothmes III, about 1450 B.C.; and a few pieces of the oldest Egyptian pottery, one of which was found embedded in bricks evidently used in the construction of the pyramid of Maydoum, dating from the end of the 3rd dynasty, about B.C. 3600.

DECEMBER 14TH, 1880.

EDWARD B. TYLOR, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following list of presents was read, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From Professor HAYDEN.—Bulletin of the U.S. Geological and Geographical Survey, Vol. V, No. 4.

From Professor AGASSIZ.—Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College for 1879–80.

From the AUTHOR.—Essays on the Languages, Literature, and Religion of Nepál and Tibet. By B. H. Hodgson, Esq.
—— Miscellaneous Essays relating to Indian subjects, 2 Vols. By B. H. Hodgson, Esq.
From the ASSOCIATION.—Verhandlungen des Naturhistorisch-medicinischen Vereins zu Heidelburg. Neue folge Zweiter Band.
From the SOCIETY.—Journal of the Society of Arts, Nos. 1462, 1463, 1464.
—— Transactions of the Imperial Society of Naturalists, Moscow, T. XXVI, liv. 2, 3 ; T. XXXII, liv. 2, 3 ; T. XXXIX, liv. 1.
—— Proceedings of the Royal Geographical Society, Vol. II, No. 12.
—— Bulletins de la Société d'Anthropologie de Paris, Avril à Juillet, 1880.
From the EDITOR.—"Nature," Nos. 578, 579, 580.
—— Revue Internationale des Sciences biologiques, No. 11, 1880.
—— "Athenæum," Part 635.
—— Revue Scientifique, Nos. 22–24.
—— Correspondenz-Blatt, December, 1880.

The election of the Rev. R. A. BULLEN was announced.

Mr. W. St. Chad Boscawen read a paper on "Hittite Civilisation." A discussion ensued in which Mr. Bouverie-Pusey, Rev. Dunbar Heath, Mr. T. Tyler, Mr. Bertin, Mr. Hyde Clarke, Mr. Park Harrison, Mr. Alfred Tylor, and the President took part, and the author replied.

The papers to be read at the next meeting were announced.

JANUARY 11TH, 1881.

EDWARD B. TYLOR, Esq., F.R.S., *President, in the Chair.*

The Minutes of the last meeting were read and confirmed.

The following list of presents was read, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the AUTHOR.—Conscious Matter. By W. Stewart Duncan.
—— Biographical Sketch of James Aitken Meigs, M.D. By George Hamilton, M.D.
—— Introduction to the Study of Indian Languages. By J. W. Powell.
—— Congrès International d'anthropologie et d'archéologie préhistoriques. Rapport sur la session de Lisbonne. Par M. Emile Cartailhac.
—— Premier Age du fer, avec un Atlas. Par M. Ernest Chantre.

From the AUTHORS.—Monographie Géologique des Anciens Glaciers. 2 Tom, avec un Atlas. Par MM. A. Falsan et E. Chantre.
From the CONDUCTOR.—The Scientific Roll, Part I. Conducted by Alexander Ramsay.
From the MUSEUM.—Das Museum Ludwig Salvator in Ober-Blasewitz bei Dresden.
From the SOCIETY.—Journal of the Society of Arts, Nos. 1465 to 1468.
—— Proceedings of the Royal Society, No. 207.
—— Proceedings of the Royal Geographical Society, Vol. III, No. 1.
—— Journal of the Asiatic Society of Bengal, Vol. XLIX, No. 245.
From the ACADEMY.—Almanach der Kaiserlichen Akademie der Wissenchaften, 1880.
—— Register zu den baenden 76 bis 80 der Sitzungsberichte der Math. Naturwissenscbaf. Classe der Kaiserlichen Akademie der Wissenschaften, IX.
—— Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. *Mathematisch Naturwissenschaftliche Classe:*—
Erste Abtheilung, lxxxi Band, 1–5 Heft.
lxxxii Band, 1–2 Heft.
Zweite Abtheilung, lxxxi Band, 4–5 Heft.
lxxxii Band, 1–2 Heft.
Dritte Abtheilung, lxxxi Band, 4–5 Heft.
lxxxii Band, 1–2 Heft.
Philosophisch-Historische Classe:—
xcvi Band, 2–3 Heft.
From the PUBLISHER.—Le Goniomètre d'inclinaison et d'orthogone le goniomètre flexible. Par Dr. P. Broca.
From the EDITOR.—"Nature," Nos. 581–584.
—— Revue Scientifique, Nos. 25, 26, 1880; Nos. 1, 2, 1881.
—— Revue Internationale, No. 12.
—— Matériaux pour l'histoire de l'homme, 1880, 8 et 11 liv.
—— "Athenæum," Part 636.

Dr. W. R. HUGGARD was admitted a Member of the Institute.

Mr. J. Evans reported upon the proceedings of the Lisbon Congress of Prehistoric Archæology and Anthropology, which he attended in the capacity of Delegate from the Institute.

Mr. G. M. Atkinson exhibited some stone celts from British Guiana.

Mr. J. Evans and Professor R. Jones took part in a discussion.

The President read a communication from Mr. F. F. Tuckett, on a supposed diminution in the size of heads during the last

quarter of a century, derived from the observations of a hatter upon his sales and stock.

In the discussion which ensued, Mr. J. Evans, Mr. Walhouse, Mr. Crochley Clapham, and Dr. Huggard took part.

A paper by Mr. W. D. Gooch was read on "The Stone Age in South Africa."

A discussion followed in which the following gentlemen took part: Mr. E. B. Tylor, Mr. W. G. Smith, Professor Rupert Jones, Mr. A. Tylor, Mr. Rudler,—and the author replied.

ANNUAL GENERAL MEETING.

JANUARY 25TH, 1881.

EDWARD B. TYLOR, Esq., D.C.L., F.R.S., *President, in the Chair.*

The notice convening the meeting was read.

The Minutes of the previous Anniversary Meeting were read and confirmed.

The Treasurer presented his Financial Report for the year ending 31st December, 1880.

ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.

Receipts and Payments for the Year ending 31st December, 1880.

RECEIPTS.

	£	s.	d.	£	s.	d.
BALANCES, January 1st, 1880:						
At Bankers'	137	1	0			
In Office		15	8			
				137	16	8
SUBSCRIPTIONS:						
Paid to Robarts and Co.	72	9	0			
,, Collector	386	8	0			
,, ,, Life Compositions	63	0	0			
,, ,, due 1879	71	8	0			
,, ,, in advance	10	10	0			
Donation	2	2	0			
				605	17	0
Sale of Bookcases				8	10	0
SALE OF PUBLICATIONS:						
Messrs. Trübner and Co. (to September)	74	15	1			
Messrs. Longmans and Co. (to June)	4	2	4			
Office:						
Journals	13	11	3			
Other Publications	18	4	3			
				110	12	11
DIVIDENDS ON INVESTMENTS:						
Half year on £1,000 3½ Per Cent. Stock	17	2	10			
Quarter ,, £1,020 7*s.* 3*d.*, 3½ Per Cent. Stock	8	14	10			
,, ,, £1,040 13*s.* ,, ,,	8	16	10			
				34	14	6

PAYMENTS.

	£	s.	d.	£	s.	d.
RENT, one year to September, 1880				130	0	0
PRINTING:						
Journal, Nos. 28, 29, 30 (1879), 31 (1880)	206	10	3			
Miscellaneous	29	3	7			
				235	13	10
LITHOGRAPHY, &c.:						
Emslie, Hanhart, Sachs, Smit				67	3	1
Loan of plates from "Nature," &c.				5	14	6
SALARIES:						
Assistant Secretary	120	0	0			
Office Boy	20	0	0			
Collector's Commission	30	4	2			
				170	4	2
POSTAGE:						
Journal	15	8	11			
Letters, Circulars, and Post Cards	12	5	0½			
Book Parcels	2	9	2½			
				30	3	2
ADVERTISING:						
Street	8	10	9			
From Petty Cash	0	4	0			
				8	14	9
OFFICE:						
Stationery, to December, 1879	3	5	6			
,, 1880	10	12	8½			
Receipt Stamps, Stamps on Drafts, &c.	3	3	0			
Bookbinding	6	18	3			

	£	s.	d.	£	s.	d.
MESSRS. HARRISON:						
Discount on Printing Account	8	12	3			
Carriage of Parcel	0	4	8			
Insurance	0	18	0			
Carriage of Parcels	2	6	4			
Carpenter	16	18	0			
Packing	2	18	0			
Miscellaneous	3	3	5			
				50	3	2½
Reporting				3	3	0
Valuing Ethnological Specimens				2	5	0
Purchase of Paintings of Tasmanians				3	0	0
HOUSE:						
Ayres, gratuity for 1879	15	0	0			
,, coals and lights	6	3	0			
,, assistance, &c.	5	1	9			
,, refreshments	21	18	0			
				48	2	9
Purchase of £40 13*s.*, 3½ Per Cent Stock				42	0	0
BALANCES:						
Due for bookcases and publications sold	7	1	6			
At Bankers'	99	17	6			
In Office	3	1	6½			
				110	0	6½
			£906	8	0	£906	8	0

Audited and found correct.
(Signed) RICHARD WORSLEY.
A. L. LEWIS.

The President appointed General H. Clerk and Mr. Bertin scrutineers of the ballot.

Mr. E. W. Brabrook, F.S.A., Director, then read the following Report:—

Report *of the* Council *of the* Anthropological Institute *of* Great Britain and Ireland *for* 1880.

Fourteen ordinary meetings and the Anniversary Meeting have been held during the year 1880. At the ordinary meetings the following communications were read:—

1. Notes on the Jivaros. By Alfred Simson, Esq.
2. The Canelos Indians. By Alfred Simson, Esq.
3. The Cagots. By Dr. Hack Tuke.
4. On the Central South African Tribes from the South Coast to the Zambesi. By Dr. Emil Holub.
5. The Origin of the Plough and the Wheeled Carriage. By Edward B. Tylor, Esq., D.C.L., F.R.S., President.
6. On Ethnological Specimens from British Columbia. By Dr. F. Dally.
7. Visualised Numerals and other Forms of Mental Imagery. By Francis Galton, Esq., F.R.S.
8. On Nicobarese Ideographs. By V. Ball, Esq., M.A., F.G.S.
9. On a New Method of expressing Degree of Changes of Specific Form in the Organic World, especially referring to the Development of the Mind and Body of Man. By Alfred Tylor, Esq., F.G.S.
10. Notes on Fijian Burial Customs. By the Rev. Lorimer Fison.
11. Notes on the Polynesian Race. By C. Staniland Wake, Esq.
12. Further Notes on the Romano-British Cemetery at Seaford, Sussex. By F. G. Hilton Price, Esq., F.G.S., and J. E. Price, Esq., F.S.A.
13. On a series of Plans and Relics from Mount Caburn. By Major-General Pitt-Rivers.
14. Notes on Pre-historic Discoveries in Central Russia. By C. H. E. Carmichael, Esq., M.A.
15. Notes on the Occurrence of Stone Implements of the Surface Period in South Russia. By W. D. Gooch, Esq., M.A.I.
16. Notes on the Western Regions. By A. Wylie, Esq.
17. Jade Implements from Switzerland. By Hodder M. Westropp, Esq.
18. Flint Implements from the Valley of the Bann. By W. J. Knowles, Esq.
19. The Stone Age in Japan. By John Milne, Esq., F.G.S.
20. The Japanese People. By C. Pfoundes, Esq.
21. Camps on the Malvern Hills. By F. G. Hilton Price, Esq., F.G.S.
22. Religious Beliefs and Practices in Melanesia. By the Rev. R. H. Codrington.
23. On Ethnological objects from New Britain and New Ireland. By Wilfred Powell, Esq.
24. On Two Skulls from Patagonia. By Don Francisco P. Moreno.
25. The Aborigines of Victoria. By Peter Bemridge, Esq.
26. On a Collection of Crania from the Fiji Islands. By Prof. W. H. Flower, F.R.S.
27. Land Tenure in Fiji. By the Rev. Lorimer Fison.
28. Welsh Customs and Legends. By Rev. R. F. Kilvert.
29. Classification of Languages on the Basis of Ethnology. By Gustav Oppert, Esq.
30. On the Asiatic Shoreline of the Hellespont. By Frank Calvert, Esq.

31. Note on a Stone Implement of Palæolithic Type found in Algeria. By Sir John Lubbock, Bart., F.R.S.
32. On Flint and Bronze Implements in the Nile Valley. By R. P. Greg, Esq.
33. On Anthropological Colour-Phenomena in Belgium and elsewhere. By J. Beddoe, Esq., M.D., F.R.S.
34. On Different Stages in the Development of the Art of Music in Prehistoric Times. By J. F. Rowbotham, Esq.
35. On Neolithic Implements in Russia. By Prince Paul Poutiatine.
36. Observations on the Methods and Processes of Anthropometry. By Dr. Paul Topinard.
37. On the Origin of the Malagasy. By C. Staniland Wake, Esq.
38. Hittite Civilisation. By W. St. Chad Boscawen, Esq.

Sixteen Ordinary Members have been elected during the year.

The Institute has lost through death: Mr. W. Napier, Mr. J. H. Challis, Mr. W. W. Collins, Mr. A. Hamilton, Lieut.-Col. J. J. D. Heath, Mr. T. J. Laing, Mr. H. B. Churchill, and Dr. Paul Broca, Honorary Member.

The former and present state of the Institute with regard to the number of Members are shown in the following Table:—

	Honorary.	Compounders.	Annual Subscribers.	Total.
January 1st, 1880 ..	49	88	309	446
Since elected	..	+3	+13	+16
Since deceased ..	−1	−1	− 6	− 8
Since retired	..	..	−14	−14
January 1st, 1881 ..	48	90	302	440

The following are the names of the donors to the Library during the past year:—

Dr. Barnard Davis; Dr. Paul Broca; Dr. E. Jarvis; E. R. Thompson, Esq.; Dr. Paul Schumacher; Prof. Agassiz; James Bonwick, Esq.; Lieut. R. C. Temple; W. Frazer Esq.; E. W. Brabrook, Esq.; E. S. Morse, Esq.; J. H. Rivett-Carnac, Esq.; Garrick Mallery, Esq.; Dr. W. J. Hoffman; W. Eassie, Esq.; Dr. Emil Schmidt; Dr. Emil Holub; Prof. Ecker; J. B. Good, Esq.; Mrs. Chaplin Ayrton; Signor Paolo Mantegazza; C. Roberts, Esq.; C. F. Gatty, Esq.; Don F. P. Moreno; Herr Moriz Benedikt; A. J. Conant Esq.; Prof. W. H. Flower; Hyde Clarke, Esq.; Prof. Virchow; Herr W. Von Schulenburg; Dr. C. Cesare Taruffi; B. Quaritch, Esq.; W. Osborne, Esq.; Rev. W. W. Gill; Dr. G. Oppert; Dr. Beaumanoir; A. T. Lewis, Esq.; Prof. E. Morselli; Dr. Paul Topinard; M. Ernest Chantre; W. Pengelly, Esq.; Brian H. Hodgson, Esq.; A. Ramsay, Esq.; W. S. Duncan, Esq.; M. A. Falsan; Dr. G. Hamilton; J. W. Powell, Esq.; M. Emile Cartailhac; Acade-

mia Nacional de Ciencias de la República Argentina; Kaiserliche Akademie der Wissenschaften, Wien; British Asoociation; Geologists Association; Royal United Service Institution; Royal College of Physicians; Koninklijke Akademie van Wetenschappen, Amsterdam; Hungarian Academy; Government of New Zealand; American Association for the Advancement of Science; Académie Impériale des Sciences de St. Pétersbourg; Royal Institution of Cornwall; Trustees of the Astor Library; Academy of Sciences, Kracow; Royal Historical and Archæological Association of Ireland; Kaiserliche Leopoldino—Carolinische Deutsche Akademie der Naturforscher; Trustees of the Peabody Museum; Museu Nacional do Rio de Janeiro; S.E. M. le Président de la Commission Impériale Archéologique; Kongelige Danske Videnskabernes Selskab; University of Tokio; The Secretary of the Anthropological Exhibition of Moscow; State Board of Health, Mass.; United Service Institution of India; National Association for the Promotion of Social Science; Agent General for South Australia; Royal Colonial Institute; New Zealand Institute; Foreign Office; Bataviaasch Genootschap van Kunsten en Wetenschappen; Smithsonian Institution; Berwickshire Naturalists' Club; Devonshire Association for the Advancement of Science, Literature and Art; Naturhistorisch—Medizinische Verein, Heidelberg; Museum Ludwig Salvator in Ober-Blasewitz bei Dresden; Society of Arts; Royal Asiatic Society; Société Impériale des Naturalistes de Moscou; Oberhessische Gesellschaft für Natur-und Heilkunde; Royal Society; Royal Geographical Society; Asiatic Society of Bengal; Geological Society of Glasgow; Royal Society of New South Wales; Society of Antiquaries; Gesellschaft für Anthropologie, Ethnologie und Ungeschichte, Berlin; Society of Antiquaries of Scotland; Anthropologische Gesellschaft, Wien; Société de Borda, Dax; Société de Géographie, Metz; American Philosophical Society; Société d'Anthropologie, Paris; Royal Society of Tasmania; Society of Biblical Archæology; Manx Society; K. K. Geographische Gesellschaft, Wien; Asiatic Society of Japan; Royal Society of Victoria; Deutsche Gesellschaft für Anthropologie, Ethnologie und Ungeschichte; Royal Dublin Society; Leeds Philosophical and Literary Society; Königliche physikalisch-ökonomische Gesellschaft; The Editor "Nature;" The Editor "Revue Scientifique;" The Editor "Revue Internationale des Sciences biologiques;" The Editor "Matériaux pour l'histoire de l'homme;" The Editor "Athenæum;" The Editor "Revue d'Anthropologie;" The Editor "American Antiquarian;" The Editor "Annuaire des Spécialités Médicales et Pharmaceutiques;" The Editor "Rocky Mountain Medical Review;" The Editor "Correspondenz Blatt."

The Council have had under grave consideration throughout the year the condition and future of the Library and Museum. Both are essential to the thorough teaching of anthropology, and the Council would have been happy if the resources of the Institute had been equal to the task of acquiring and maintaining in due efficiency, a library, a craniological collection, and an ethnographical museum. The facts have been, however, that while by several munificent gifts at the time of the establishment of the Anthropological Society of London, and by others made since, a valuable library has been acquired, which some attention to the filling up of lacunæ in various departments may render increasingly useful to the Anthropological student, and while the Institute has a most valuable collection of skulls and skeletons, it has on the other hand never succeeded in collecting an ethnographical museum of any educational value. A few articles, not unfamiliar to the visitors to any large ethnographical museum, such as weapons, dresses, models, &c., have been

presented to the Society at various times, but while they have occupied much wall space in the rooms of the Institute, and thus cramped the library, they are neither sufficient in number nor capable of arrangement in any order complete enough to serve the purpose intended. Upon a careful review of the whole of the circumstances, therefore, the Council have resolved that it would be the wisest course for the Institute to devote all spare funds to the enlargement of the Library, and to maintain the collection of skulls and skeletons, but to give up the attempt, which they are convinced would be a hopeless one, to establish any sufficiently large and comprehensive ethnographical museum.

Their view was confirmed by the independent professional opinion of a valuer nominated by an eminent firm, who estimated the value of all the ethnographical specimens referred to at only £45. It appeared clear that if, after so many years of desultory collection, the objects gathered were worth so little, it would not be likely that any further efforts in the same direction would be rewarded. It was also evident that the objects themselves, small as their intrinsic value was, and useless as they were in the rooms of the Institute for any purpose of teaching, might, if incorporated in some of the National Collections, become of real value to the comparative Anthropologist. The Council resolved, therefore, subject to the approval of this Meeting, to accept two offers, amounting together to £54, or £9 more than the valuer's estimate, viz.: one of £14 from Mr. Franks, curator of the Christy Collection, for the Burmese gong, and one of £40 from Major-General Pitt Rivers for the other objects, with the view of their being ultimately deposited at South Kensington. With these funds it is proposed to acquire books for the Library, which will require, when extended, the whole of the wall space set free by the removal of the weapons, &c. Already several fresh shelves have been erected, the Library has been carefully rearranged, and a draft catalogue prepared, which has been printed in slip to enable members of the Council, and other members interested, to point out additions that would be desirable, and to offer suggestions. The Council are confident of the hearty concurrence in these steps of every member who has had occasion to use the Library or to visit the Museum, and those who have not hitherto had occasion to do so will, it is hoped, be convinced by what has been urged that the steps recommended by the Council is conducive to the real interest of the Institute. The Council think it a matter, however, which in the words of the regulations is one that ought to be brought by them before the Annual Meeting for the consideration of the members, and it is so brought forward accordingly.

The PRESIDENT then delivered his Annual Address :—

In the present active state of our science, the attempt to give a general account of the Anthropological books and papers of the year would expend my hour in a heavy bibliographic catalogue. I will rather select for remark a few prominent topics.

The Anthropologists of the United States show increasing activity in investigating the native tribes within their borders, while something of genuine native custom and belief still stands out against invading civilization.

The Bureau of Ethnology of the Smithsonian Institution publishes an "Introduction to the study of Indian Languages," by its Director, Major J. W. Powell. For the guidance of all persons brought into contact with the native tribes, it gives a careful account of the philological points to be looked out for; and apart from this use, it has a philological value of its own. The Bureau of Ethnology also issues Lieut.-Col. Garrick Mallery's "Introduction to the Study of Sign-Language among the North American Indians, as illustrating the Gesture Speech of Mankind," which has been followed by a "Collection of Gesture-Signs of the North American Indians," printed only for distribution to collaborators, with whose aid a full and final work on the whole subject is eventually to be published. Former information as to the sign-language of the American wilds was scanty as compared with the present elaborate collection of signs, which are described with great care, and even illustrated by drawings of the position of the hands and the movements of the arms in making the gestures. Among interesting American signs may be mentioned that for "stone," where the closed fist of the right hand hammers the palm of the left, a clear relic of the time (not long past) when the only hammer was a stone. As an example of the several variant signs current in different districts to express one idea, may be taken those for "horse;" sometimes made by the fore and middle fingers of the right hand, astride the edge of the left hand, like a man riding; sometimes with the two closed hands imitating a

gallop; sometimes by the thumb and two first fingers joined at the tips, and held horizontally, while the fourth and little finger somewhat separate, so that the whole hand gives a fair representation of a horse's head with the ears. For an instance of the way in which gestures originally carrying an evident meaning may become abbreviated, so that a stranger cannot understand them, may be mentioned the sign for "old man" which a Cheyenne made by holding his right hand forward, bent at elbow, fingers and thumb closed sidewise. When he saw that Colonel Mallery did not understand him, he took a stick, bent his back, and completed the sign into the figure of a tottering old man leaning on a staff. Lastly, one instance may be cited from what may be called the grammatical part of the gesture-language, how one can show in signs the connection between two persons or things or actions, which in speech we express by the conjunction *and*. When seen, it is the simplest thing possible. For instance, the knuckle of the right hand struck smartly into the hollow of the left means "shot," and the two hands falling over means "killed;" then if these two signs follow sharply on one another, this makes a conjunction between them. So with the phrase, "the white men *and* I," the white men are expressed by the hand across the forehead to indicate the hat, and this sign is followed sharply by pointing to oneself to connect the two. Though the principle of the gesture-language is the same everywhere, whether among the wild hunters of the prairies or the deaf and dumb of our asylums, and, indeed, any human beings can make shift to communicate with one another in gestures at first sight, yet strangers to a great extent will use different signs, which will only be intelligible so far as they take their sense straight from nature. People who have got into the habit of using conventional or abbreviated signs among themselves, must get out of this habit, and return to the simpler imitation to be universally understood. I say this more especially because of a passage in my "Early History of Mankind," where, fifteen years ago, I brought forward the gesture-language as a subject throwing much light on the working and history of the human mind.

In speaking of the gesture-language of America, I observed that "the same signs serve as a medium of converse from Hudson's Bay to the Gulf of Mexico." Colonel Mallery takes exception to this, as liable to encourage the mistaken notion that the sign-language is identical throughout the Continent, whereas, in fact, no two tribes would use precisely the same "dialect," so to speak. Colonel Mallery, in another place, admits that when the passage is taken together with others, my remark must mean that the sign-language of different tribes is (what he and all who understand the subject know to be the case) the same in principle, notwithstanding divergence in detail. Still the passage is liable to mislead, through careless wording, and I intend in a future edition to make it more clear. The collection of gesture-signs from the American district is now altogether fuller than in any other wild region. Something has been done in Australia, especially in Brough Smyth's work on the "Aborigines of Victoria," and it is to be hoped that the circulation of these Smithsonian publications will cause the collection of sign-language in such districts as Polynesia. The study of the gesture-language of the deaf-and-dumb is not just now flourishing. The general introduction of articulation and lip-reading, while beneficial to the deaf mutes themselves, is tending to discourage the native converse by gesture-language. However, losing this is not to lose the evidence for science, for the forms of the gesture-language are implicated in human nature, and will always spring up afresh when circumstances favour. It is satisfactory to notice that Prof. Steinthal's dissertation on the "Language of the Deaf and Dumb," written thirty years ago, is just republished in the collection of his minor writings.

The Smithsonian Institution also publishes an "Introduction to the Study of Mortuary Customs among the North American Indians," by Dr. H. C. Yarrow, as a guide to those who have opportunities of making further observation and record among the indigenous tribes. It not only serves this purpose, but is of value to the Anthropologist as a collection of burial customs, for those of America are wonderfully varied, including most which

are known anywhere in the world. The most frequent kinds may be mentioned. Burial in the ground is common, often with wood over the body to prevent the earth from pressing on the corpse. Collection of the bones after the flesh has rotted away, and their preservation in ossuaries of the tribe, is often met with. Tree and scaffold burial, when the corpse is put up in a tree or on a platform out of the reach of wild beasts, and protected by basket work or a canoe-coffin, prevails across the continent. Cremation appears especially among the western tribes. The Nishinams of California have a legend of its introduction, as if they thought it not always the custom. In cist-burial, where a box or chamber of stone slabs protects the body, this may be the stone inner chamber of a mound or cairn, as in the Old World. Mummies, whether by natural drying or more artificial preparation of the corpse, are common. Urn-burial is not unknown, when the bones, or such as are not consumed on the funeral pile, are kept in earthern pots. The Caddos expose their dead warriors to be devoured by wild beasts like the old Persians. The cannibal practice of eating the dead is among the few funeral rites absent from this district of the New World. Among details specially worthy of remark is the Aleutian custom described by Dall, in vol. i. pp. 83–89 of the "Contributions to North American Ethnology," published by the United States Survey of the Rocky Mountain Region. In the large communal dwellings or yurts, where the inmates entered by the hole in the roof, descending by a notched upright beam, and the space within was divided around into compartments like the state cabins of a steamer, the dead were sometimes enclosed in the apartment they had occupied while living, which was filled up with earth, while the other inmates remained in their rooms. This mode of burial in the communal house has been already noticed in relation to the chambered tumuli of England. Dr. Yarrow quotes Professor Whitney's account of the skulls from the cave in Calaveras County, near the Stanislaus River, not unknown to comic literature; it appears to have been a modern Indian burying place, and the skulls were not buried in the stalagmite

but lay on its surface. Dr. Chesney gives a curious account of a Sioux practice of disposing of the dead man's effects by what he calls a "ghost gamble." The property being divided into lots, one Indian represents the ghost, and the others play against him; when one wins a lot of the goods he goes off with them. This gambling is now done with the white men's cards, but in old times the ghost play was done with the marked plum stones, which, as I have elsewhere pointed out, the northern Indians probably got from the marked beans of the Mexican *Patolli*, itself an Asiatic game.

An account of an Indian mound-interment may be mentioned, by Dr. J. Mason Spainhour, in North Carolina, who says that this remarkable burial will convince every Freemason that the American Indians were in possession of at least some of the mysteries of the order, and that it was evidently the grave of the three highest officers of a Masonic Lodge. The grave was situated due east and west, an altar was erected in the centre, the south, west, and east were occupied, the north was not; implements of authority (stone tomahawks) were near each body. This may be mentioned here as an example of the way in which old customs suggested by nature (such as burying towards the cardinal points) having found their way into Freemasonry, are fancied by zealous disciples of the craft to have originated there. Only lately statements have been made about Masonic signs among the natives of Australia; when we are told precisely what these signs were, we may possibly be able to account reasonably for the savages using them.

Having mentioned vol. i. of the "Contributions to North American Ethnology," it may be added that vol iii. has been issued, last year, the portly quarto on "Tribes of California," by Stephen Powers. Among its many facts, notice may be taken of one which appears in the first chapter, the use by the Károks of the Klamath River of a sharp stone gripped in the hand as the ordinary native weapon, armed with which an Indian "will face a white man and give him a handsome fight." It seems very likely that the hand-gripped stone implements of the Drift

Period, especially those where one end is left for grasping, may have been in habitual use in this way. In speaking of the same tribes the utterance of a dead relative's name is noticed as the highest crime one can commit; it is the highest insult to the survivors, and may be atoned for by the same amount of blood-money as is paid for wilful murder, or they will revenge the insult by the utterer's blood. Their reason for this very common practice of not speaking the dead man's name is explained here: "At the mention of his name the mouldering skeleton hears in his grave and moans." We know how difficult savages find it to suppose even a corpse utterly dead, and may well believe that they think the corpse will be disturbed by hearing his name. Among the details blood-money was just mentioned. This "Indian money" is red scalps of woodpeckers, or strings of the dentalium shell. Rude as this currency is, the idea of payment has so thoroughly entered into the native mind, that the only legitimate marriage is purchase by strings of shells; a woman not thus bought is a degraded outcast. Not to go further into this important book, nor to do more than mention other reports of the United States Geographical and Geological Surveys as containing much Anthropological information, I am bound to add a remark neither pleasant to make nor to hear. While on the United States side so much labour and cost is expended in investigation and record of the indigenous tribes, why do not we receive documents of similar value from the Dominion of Canada? There native tribes are numerous, and the Canadian Government and the Hudson's Bay Company may claim the merit of undertaking their practical management, preserving them with a kindly hand, and setting them to such occupation as they will take to. But they seem behind our other Colonial possessions, such as New Zealand and Australia, in the sense that the minute record of native tribes is a valuable contribution to human knowledge, the materials for which must be collected now or lost for ever. Surely if the remissness of British North America in dealing with its Anthropological material is clearly made

apparent, a wholesome rivalry with the United States may stir those in authority no longer to lay themselves open to the charge of want of intelligence and public spirit in this respect.

In the Berlin "Zeitschrift für Ethnologie" (vol. xi) have lately appeared two articles of great interest to students of the zoological history of man. Dr. Barttels collects cases of extreme hairiness (hypertrichosis) in man. Notably among these are the hairy Birmese family, and, among Europeans, the hairy family of Ambras, so called from their portraits being at the castle of Ambras, near Innsbrück. Dr. Siebold has treated of these latter in the "Archiv für Anthropologie" (vol. x), but Dr. Barttels has gone further in their identification. There are portraits of the family at Vienna, recognisable as the same, while in them there is no extenuation of the beast-like appearance given by the shaggy hair, which in the Ambras portrait was softened down. The father, who in the Vienna catalogue goes by the name of the "hairy man of Munich," or "hairy baron of Munich," and who lived about 1550-1600, is wonderful for the hairy coat which covers his face, and has to be combed upright off his forehead to keep it out of his eyes; and his hands are equally shaggy. His wife, who sits by him, seems an ordinary good-looking German woman, but the two children inherit the father's type. The boy holds an owl, to which his brushed-hairy countenance shows an absurd likeness. Some other portraits are recorded as having come some years ago into the hands of a London bookseller, F. S. Ellis, and Dr. Barttels asks if they can be traced in England. The hairy man of Munich and his family appear to be the group described by Felix Plater in 1583, who says he married a smooth woman (mulier glabra), and had two hairy children. If they are the same, we know from his account what would be inferred from the face and hands, that the hair covered the whole body. Cases like these, and others described by Dr. Barttels, will aid in the study of hairiness as a race-character, and in working out the relation of man to progenitors whose plentiful hairy coating contrasted with the meagre remnants of body-hair in our smoother race, such as the slight tuft on the back of

the fingers. The other contribution is from Dr. Ornstein, Surgeon-General in the Greek Army, who sent a photograph of a soldier, with a distinctly-formed tail. The original, Nicolas Agos, of Livadia, aged 26, came in July last before the medical inspection and was passed as a recruit; as he turned to leave the room, there was noticed a perpendicular prolongation of the tapering end of the coccyx, projecting about an inch from the level of the skin, and which could be felt about an inch further in. It is not a case of *spina bifida* (as in the photograph of a Hindu child sent me by Mr. Lawson Tait), but a real tail; and Dr. Ornstein's strong expressions as to its bearing on the development-theory do not seem exaggerated. There is reason to believe that there are always a few tailed men of this kind living, but authenticated and published specimens of *homo caudatus* are rare in the extreme.

Professor Steinthal goes into the question of relation between Australian languages and others of the world. Bleek thought he saw in them traces of connection with the Bantu group of South Africa, while Caldwell traced a connection (also propounded by Norris), with the Dravidian languages of South India. Steinthal, after careful examination, pronounces both theories unsound, and the Australian language-family independent. He points out, what might be adduced as evidence in the opposite direction, that there exists in Australia a vowel-harmony comparable with that so often remarked on as characterising the Mongolian tongues, a root with *a e i* vowels taking an *i* suffix, while a root with *o u* vowels takes an *u* suffix. Analysing the structure of the Australian sentence, Steinthal pronounces its free form quite incompatible with the fixed Mongolian forms to be found in Yakut or Hungarian. He notices a curious Australian point of formation, that real words such as things, persons, qualities, actions, begin with a consonant, whereas grammatical forms or suffixes begin with a vowel, which is unlike Bantu or Dravidian. The possession of an accusative marks the Australian as different from any but Caucasian languages. The forms are often very peculiar, thus

have is difficult to express; "in-not-my-hook" signifies "I have no hook." Though their numeral system is poor, he thinks their type of speech higher than either Kafir or Dravidian, and considers their low state degenerate from defective subsistence. Among the many other topics discussed in the "Zeitschrift für Ethnologie" may be mentioned Dr. Jagor's visit to the Kanikars, in the Palamcotta District of South India. He found their tree-dwellings (of which he gives sketches) deserted for some years past, but the people feared they might have to resort to them again from the increase of tigers and elephants near their settlements. The villages of these Kanikars show how low barbarous tribes passing into agricultural life tend everywhere to organise society on a socialistic basis; they cultivate jointly, and divide the crops according to the numbers of each family. All the archæologists of Germany seem to be puzzling themselves over the origin of cup-markings in the old church walls, for which a wonderful variety of origins are suggested, even that they are bullet-marks. On the curious subject of ancient trepanned skulls a quantity of evidence is given. Professor Virchow's remarks on characteristics of skulls of low races is too extremely technical for me to venture on giving an account of it. The study of the development of the colour-sense has been active in Germany; but, so far as I can make out, is hardly yet completely enough worked out for a summary of results. Dr. Rabl-Rückhard suggestively draws notice to the fact that, while such distinction as between blue and green are most inexact among the lower races, attention is concentrated on red, which most strongly affects their emotions. No doubt it is true, as the writer points out, that our otherwise irrational scarlet uniform has an extraordinary effect in terrifying the minds of barbaric enemies, related to its corresponding effect in stimulating the courage of those who wear it.

Dr. Arthur Mitchell's "The Past and the Present: What is Civilization?" raises several interesting questions as to the survival of early arts and ideas in the neighbourhood of modern culture. Travelling in the highlands and islands of Scotland,

he was struck to see peasants of some education finding a summer lodging in those buildings of ancient type, though sometimes of modern date, the bee-hive houses, domes built of converging layers of rough stones and covered with growing turf. There, too, he noticed fragments of pottery unglazed, and not thrown on the wheel; and afterwards he made the acquaintance of an old woman who keeps up this pre-historic art, nowadays perhaps more for the tourist to buy as a specimen of modern barbarism than for serious competition with Staffordshire. Dr. Mitchell found the spindle in use in several districts, not many miles from factories with their improved machinery; while, in districts where it has gone out of use for a few generations, it has been so forgotten that, when the spindle-whorls are picked up, they are kept as "adder-stones" for charms. Dr. Mitchell insists on the real and important argument that low arts do not always prove low capacity, for there are often practical reasons why they should be kept up. No doubt there is economy in the old women filling up with the spindle (as in France and Switzerland) hours which would otherwise be wasted. And there are districts where it would not pay to send corn 20 or 50 miles to be ground by the best machinery, so well as to grind it at the rude Norse water-mill on a brook, or let the women grind it in the old-fashioned quern at home. All this and much more evidence forms for Dr. Mitchell a theory of civilization opposed to the prevalent mode of measuring it by industrial arts, and looking rather at general conditions of well-being. The view that he adopts, that civilisation is the opposing force to natural selection, doubtless has a true side to it; the weak and helpless, who in lower culture would perish in the struggle for existence, are in the higher culture preserved and helped. There does not seem anything really antagonistic in this to any well-considered and guarded theory of evolution of civilisation, for the preservation of weak, but in some respects valuable members of society is the act of a well-organised corporate body doing its best for itself. Dr. Mitchell's frontispiece of the cripple on the blind man's

back, as a type of civilisation, may serve to illustrate this view. In low culture only the individuals who are capable all round will survive, but in high culture, those who can see but not walk, or walk but not see, are cared for by the organised society, for though incomplete they are valuable. One of the best points in this suggestive book is the author's description of the outcast tinkers living in the Hawick caves, in some respects low and brutal as savages, though by profession belonging to the Iron Age. His weakest point is his taking, as rough and savage, implements and arts which are really much advanced; thus the hand-quern is a machine only known to civilised nations, and the spindle, simple as it is, represents a great advance beyond spinning thread between one's hands like the New Zealanders do. I must not give the inference that Dr. Mitchell resists in any thoroughgoing way the doctrine of development in culture, and he does the fullest justice to the survivals from ancient stages of barbarism to be found in Scotland;—the holy wells and rag-bushes; the burying of a live cock, still occasionally practised as a cure for epilepsy; the prohibition of iron and matches when the sacred fire was carried round the fields; and the curious persistence with which the mourners at a funeral, no longer having to bury the dead under a cairn, still build a little conical one 4 feet high at the place where the funeral procession halts.

Prof. Ray Lankester's lecture on "Degeneration" to the British Association, Sheffield, 1879, since published in the "Nature" Series, though its purpose belongs to general Biology, has a special bearing on Anthropology. Its argument is to bring into view the importance in the history of life of those forms where the tendency has not been toward increased elaboration, but falling off in organisation takes place, as where the animal, becoming parasitic or fixed, obtains its food without hunting for it. Then legs, jaws, eyes, ears degenerate away, and the active crab or insect becomes a mere sac, absorbing nourishment and laying eggs; or the swimming nauplius fixes its head against a piece of wood, and becomes a barnacle with organs of touch and sight atrophied, and legs only serving, as it were, to kick its

food into its mouth. It is a just comparison that human civilisation, being in like manner subject to the laws of evolution, has its phases of degeneration as well as of progress.

As we know, the arguments on early and barbaric marriage laws as throwing light on primitive society have long been going on, and since the first mutual criticism of Mr. M'Lennan and Mr. Morgan on the relative claims of their schemes to reconstruct the early social condition of man, a certain acrimony has found its way into the discussion. Perhaps this may have distracted some minds from the purely scientific study of the problem into partisanship of one or other side. But, on the other hand, it has given liveliness to a somewhat difficult and technical discussion. The public does not object to these argumentative contests, probably with a well-founded feeling that they thus avoid being put helplessly in the hands of a single school of thinkers who praise and back one another. A warm personal controversy secures the public, that what is advanced on either side will be sharply criticised on the other; indeed, that when theorists fall out, students will come by their own. Among recent works of importance in the problem of primitive society is the volume by Fison and Howitt on the Kamilaroi and Kurnai tribes of Australia, with special reference to their laws of marriage and descent. Though this is Mr. Fison's first systematic work on the subject, he has long been engaged in its study. Indeed, it was he who obtained, years ago, the curious statement of Mr. Lance that the intermarrying groups of Australia were actually united in a kind of limited communal marriage. This statement became one of the foundations of Mr. Morgan's ideal scheme of the development of marriage, in his "Ancient Society." Mr. Howitt is the well-known Australian explorer. Both Fison and Howitt, brought up, so to speak, in Morgan's school, remain, in most respects, disciples of his. For my own part, I may express an opinion, which I fancy will be shared by many students, that while M'Lennan, Lubbock, and Morgan have contributed much to the solution of the obscure problem how primitive society was

organised, they neither singly nor jointly have yet untied all the turns of this complex knot. They have all come by different methods to look to an original system of what has been called communal marriage. But as to the steps by which the transition was made to more developed institutions, there is great difference of theory. In some respects it seems to me that the new evidence in this book tends to modify the previous conclusions. The alleged effect of female infanticide in bringing on capture of wives is not supported by the evidence from Australia, where the children abandoned are as often boys as girls, for girls as food-gatherers are as valuable to the tribe as lads. The view that communal marriage was broken up and exogamy brought on by capture, which for the first time gave the warrior an individual property in a wife, may, perhaps, be squared, but not quite easily, with the Australian rule in some tribes that a man may not have a wife when he has captured her, unless she is of the class he is bound to marry into. On the other hand, Fison's ingenious arguments seem often too ingenious. He attempts to account for the widespread custom of avoiding the mother-in-law by the fact that she, being of the same class with her daughter, would be theoretically her own son-in-law's wife, which awkward combination is prevented by the two utterly avoiding one another. It is not easy to see, however, why this should cause the man to avoid his father-in-law also, which he does in Australia and all over the world. The great fundamental difficulty of the whole matter lies in the explanation how men, beginning with what Morgan calls the consanguine family, where marriage was unrestricted, moved into a more advanced stage. Morgan treats the change as an early but most important reform in society to restrict this state of things to more limited marriage, excluding the nearest blood-relatives: and Howitt takes much the same view. But the question is, how could man in a state of extreme rudeness be considerate and politic enough to become conscious of the evil and the remedy? We must ask for more perfect explanation before receiving such a theory as proved. No man knows a savage's mind better than Fison does, and he is

so impressed with the difficulty savages would find in taking such a step, that he calls in supernatural aid to help them. In fact he falls in with the ideas of the Dieri natives, who have a myth that the tribe becoming sensible of the evils of breeding-in, the old men called on the Great Spirit, who told them to divide the tribe into branches, each with a different clan or *murdu*, and to cause a man not to take a wife of his own *murdu*. Mr. Fison will not, perhaps, gain many adherents in explaining savage institutions by ordinary natural processes as far as possible, and then, because he finds a problem too hard, bringing in a supernatural cause, which thus is degraded into a result of the enquirer's ignorance. But one cannot more strongly put the difficulty of the problem than by seeing that it has driven a writer so ingenious in devising natural explanations, to abandon the attempt. I have spoken at some length of this volume, regarding it as a new move in a discussion of early society which will lead us far before we have done with it. But it is abstruse and difficult in the extreme, and I hope to deal with it fully and with the necessary care and reservation at some future time, and would ask that the present remarks, made to call attention to it, may not be themselves criticised as a deliberate move in the controversy.

I have now to make brief mention of our own papers during the past year. On the ground which the French Anthropologists regard as Anthropology proper, namely, the physical study of man, our most important contribution is Professor Flower's account of the skulls of the Kai Colo, or mountaineers of Fiji, the most dolichocephalic of mankind, with an index of 66. Many of us who are not profound anatomists, though sensible of the general value of skull-measurements as bearing on race, have been apt to think their study in the hands of craniologists running into unprofitable minuteness and complexity of observation. But no one could have heard Professor Flower's paper without feeling that the results of minute comparison are justifying themselves when they come to be generalised. The systematic regularity with which various skull measurements

show themselves capable of being traced by numerical averages from these pure-bred Kai Colo to the mixed coast-tribes, is an instance of arithmetical determination of race which is a great step towards making Anthropology an exact science. To our eminent foreign associate, Dr. Topinard, we owe a valuable set of instructions for process of body-measurement, a difficult task for the inexperienced hands of the non-medical traveller. Though our science has lost Broca, a loss of which we have already spoken to-night, the French Anthropological Society will doubtless continue to move on the lines of investigation which that distinguished man did so much to start it upon. Dr. Beddoe contributes an account of "Anthropological Colour-Phenomena in Belgium," &c. The specimen of a stone implement of palæolithic type from Algeria, exhibited by Sir John Lubbock, brings the problem of the antiquity of man into a new district. Mr. R. P. Greg adds to our knowledge of the early civilisation of Egypt, by a paper giving new localities where flint flakes are found; but more worked implements, such as scrapers and hatchets, are scarce, as if the flakes were carried away for finishing. Stone celts are very rare in Egypt, probably, in Mr. Greg's opinion, from the early use of bronze, with respect to which he also remarks on the absence of the flanged and socketted celts so common in Europe, as separating our bronze age from the early bronze age in Egypt. He also mentions apparently palæolithic implements as found by Mr. Calvert on the Dardanelles. Mr. Hodder M. Westropp, in a paper on "Jade Implements found in Switzerland," disputes the Asiatic origin of the stone, but without referring it to any precise European locality. The question is interesting as bearing on pre-historic trade-routes. Mr. Carmichael gives an account of Poliakoff's pre-historic researches in West Central Russia, and Mr. W. D. Gooch describes the stone implements of the well-known black-earth level met with in the steppes of South Russia. He mentions the great number of burial mounds and the mysterious stone figures which have long puzzled antiquaries; these, he says, are now degraded to gate-posts.

Mr. Gooch, in a paper on "The Stone Age in South Africa," attempts to refer the implements to several geological periods, beginning with implements of palæolithic type in glacial beds, and following on to the modern alluvial period. This first attempt to divide the Stone Age and connect it with geology in Africa is likely to lead to important results. We have also information on pre-historic finds and stone implements in Russia, by Prince Paul Poutiatine. Mr. W. J. Knowles' "Flint Implements from the Valley of the Bann" notices some peculiar tongue-shaped implements from split pebbles, and tanged heads for fish spears of remarkable rudeness. The problem of the antiquity of the "Stone Age in Japan," especially as determined from the shell-mounds, is treated in an important paper by Mr. J. Milne, who considers that the period from pre-historic to modern times is represented in these rubbish-deposits. The newer archæology of our own country is represented by the notes on the "Romano-British cemetery at Seaford," by Mr. Hilton Price and Mr. J. E. Price; and on "Camps on the Malvern Hills," by Mr. F. G. Hilton Price.

Dr. Gustav Oppert's paper on "A classification of Languages on the basis of Ethnology," is an outline of a scheme of division founded on distinction between "concrete" and "abstract" languages, which is more fully described in the author's work on the subject.

Mr. Francis Galton's paper on "Visualised Numerals," has excited great interest, with its set of diagrams of the forms in which the numbers arrange themselves before the "mind's eye" of those who have this peculiarity, which I am, perhaps, a competent person to appreciate from my absolute want of any trace of such a faculty. A surprising amount of evidence now comes into view on this interesting point in the history of mind. I will only mention a neighbour of mine, Dr. Meredith, of Wellington, who tells me he has for many years amused his friends by giving them sheets of paper to draw the set of numeral figures as they see them. His own mental diagram is a little hill and valley line, suggested, he thinks, by the Welsh

landscape of his childhood. Mr. Alfred Tylor's paper on a "Method of expressing Change of Specific form in the Organic World," dealt especially with the problem of ornamentation, working out with a fine series of diagrams the principle that ornament is the manifestation of real structure. The meeting which heard the paper considered that this theory at least met one of the most important causes of ornamentation, whether in the designed patterns of man or the contour and markings of animals.

The well-known African explorer, Dr. Holub, gave us a valuable discourse on "The Central South African Tribes." He is sure that the famous ruins of Monomotapa were the work of no tribe at present found in South Africa. The shape of the blocks of granite, narrowing inwards, and with a curved outer face, which were put together without cement, reminds one of the Peruvian masonry. A striking contrast to these old fortifications are the present Koranna dome-huts of branches covered with mats. Of Mr. Fison's Australian researches I have already spoken at so much length, that as to his two papers read before us this year, on "Fijian Burial Customs" and "Land Tenure in Fiji," I will only say that their extraordinary accuracy makes them valuable evidence for future writers on early institutions. When the paper on "Religious Beliefs and Practices in Melanesia," by the Rev. R. H. Codrington, is printed, it will be found to contain a minute account of an almost unexplored district of theology. We have by this time become used to finding complex and interesting religions among tribes, whom superficial travellers have remarked on as people from whose minds all ideas of deity and worship were absent.

Mr. Calvert's paper "On the Asiatic shore-line of the Hellespont," where he adduces evidence that the sea has long been encroaching on the land, has archæological interest with regard to the site of Troy. It will be found printed in the "Ztschr. f. Ethnologie," with remarks by Prof. Virchow. Mr. Howorth gathers together from the Byzantine historians and other sources the evidence of "The Spread of the Slavs and Bulgarians." Mr. Wylie gives from a Chinese authority, the Tseen Han Shoo,

a quantity of documentary records on the Western Regions, of which the anthropological value lies in mentions of old national divisions and characters. One of our last meetings heard a discourse by Mr. Boscawen on "Hittite Civilisation," which treated of the evidence which has of late brought this ancient nation into prominent notice. But, both as to their inscriptions and their history, much has to be done before the anthropological place of the Hittites can be exactly fixed.

Mention should be made of "Nicobarese Ideographs," by Mr. Valentine Ball, and Mr. Pryer's communication on "Tribes of North Borneo." Mr. Peter Bemridge's paper on "The Aborigines of Victoria" is founded on close personal knowledge of native tribes on the Murray River and elsewhere, and details of interest are given as to marriage relations, kitchen-middens, &c. It has been generally considered that the cookery of the aborigines did not include boiling, but the author mentions coming on a party of natives not yet at all Europeanised, and finding that they had been boiling shrimps in a wooden vessel put on hot ashes. He also describes their spinning opposum fur into string with a spindle, and it will be desirable to ascertain whether (contrary to general opinion) there is any reason to suppose this instrument was known to them before contact with Europeans. The descriptions of native medical treatment by the sweating-bath, bleeding, &c., are also of interest.

Mr. Staniland Wake's "Notes on the Polynesian Race" corrects a popular misapprehension as to the brown Polynesians being almost beardless; he also discusses the use of the bow and arrow in Polynesia, arriving at what I believe is the most usual opinion, that it came with them from Asia, though in some islands (as the Tongan) it has come down to mere sport like rat-shooting, and in others (as in New Zealand) it has disappeared altogether. The same anthropologist has made a new trial at the vexed problem of the "Origin of the Malagasy." Mr. Rowbotham's paper on the "Development of Music in Prehistoric Times" deals with the sequence of the musical stages marked by the drum, the pipe, and the harp, and the connection of this

progression with the development of melody and harmony. I have given evidence and argument on the "Origin of the Plough and Wheel Carriage," attempting to trace these great instruments of civilisation stage by stage,—the plough from the rude hoe made from a bough with a pointed side-branch, the wheel carriage from the trunk of a tree used as a roller.

It is to be hoped that the Institute may have in a publishable form the remarkable anthropological facts from New Ireland, of which Mr. Wilfred Powell gave a verbal account. Much the same may be said of Dr. Dally's remarks on articles exhibited from British Columbia. The mysterious pictures of eyes, &c., on the canoes, huts, and other objects, appear not to be mere decoration, but to have a picture-writing significance, which, now that attention has been called to it, may, it is hoped, be found and recorded before it dies out.

In now resigning this chair to an already tried and successful President, General Pitt-Rivers, it may not be inappropriate for me to express a hope that his Museum of Weapons, which illustrates so many problems in his History of Civilisation, and has been already in its collector's hands so fertile a source of new ideas, may in some shape become a national institution. It is not a small duplicate of the national ethnographic collection of the British Museum, but something of different nature and different use. It is not so much a collection, as a set of object-lessons in the development of culture, and the student whose mind is unprepared to visit intelligently the British Museum collection, may gain by preliminary study of the Pitt-Rivers collection an idea of development which will be a natural framework for further knowledge. He will know better what to look for in the vast galleries of the British Museum, and how to appreciate its meaning when he sees it. It only remains for me to thank the office-bearers and other members of this Institute for the indulgence which they have given to my attempt to discharge the duties of President under many disadvantages, among them that of living at a distance too great to allow of my attending all the meetings and committees.

ANTHROPOLOGICAL MISCELLANEA.

A Horned African Family.

(From a Dublin Correspondent.)

At a meeting of the Royal Irish Academy in this city on Monday, Sir Robert Kane, F.R.S., presiding, Professor O'Rieley read a letter from Dr. Macalister in which he says: "Some years ago my friend Dr. Minchin, showed me the enclosed photograph brought home by his son, the late Dr. R. Minchin, and informed me that the man depicted belonged to a family somewhere in West Africa, and that they were famous as executioners, and all the family had the same horns, some bigger and some less. I made a large number of inquiries among my acquaintances, residents of the West of Africa, and got very little satisfaction until Dr. Allen, on a former visit, discovered that these people lived at Akim, and confirmed the particulars brought home by Dr. Minchin. In one other case which I have heard described the horns are on the molar bone, and projecting external to the eye. In the photograph sent by Dr. Minchin, the horn is maxillary, and is an outgrowth of the front border of the floor of the orbit. I have no African skull showing any approach to this peculiarity of organisation." In a letter of the 26th February, 1881, written by Dr. Allen, of Bathurst, West Africa, to Dr. Macalister, the writer says: "You will recollect that Captain Hay (now in Tobago West) had stated he had seen these men at Akim. He had one of the men *en route* for England, but he refused to proceed eventually, Captain O'Brien saw this man at Elmina, and he describes him as follows:—"He was, as regards physique, colour, hair, &c., similar to an ordinary native. The horns occupied the molar region—were about 2 inches in length, their direction being, I believe, from the description, upwards, outwards, and forward, non-movable, and covered with skin." An inspection of the photograph shows that the technical description of "the horns" on the molar bone projecting external to the eye, might be expressed in another form by simply saying that on either side of the nose, and below each one there is some sort of an excrescence, amounting to a deformity, just as much as a round foot is a natural deformity, and that it is rather an abuse of terms to apply the word "horn" to it. Dr. Frazer said they should be indebted for the communication, and that an effort should be made to ascertain whether this deformity was a disease or an occurrence of a racial character.

Bushman Cave Paintings and Stone Implements.

Low as is the grade of the Bushmen's intellectual culture, they have the very wonderful art of decorating the rocky walls of their dwellings with representations of quadrupeds, tortoises, lizards, snakes, fights, hunts, and the different heavenly bodies. The drawings that are made inside the caves are chiefly upon sandstone in ochre of various colours. I succeeded in getting several of the curious tools, consisting simply of triangular pieces of flint, with which the outlines of the engravings are cut; these are likewise used for several domestic purposes. Another implement not uncommon among them was a heavy stone fastened to the thicker end of a pointed stick, sometimes 3 feet long, though occasionally not more than half that length, its use being either to dig up roots, or to make holes in search of water. Stones, it may be mentioned, are not unfrequently found on which the engraving had only been partially made, and where there had been an attempt to obliterate the design. In some cases the objects are indicated only by lines of shading, while in others they are chiselled entirely out of the rock. These last are the most striking of all, and I believe that the 18 specimens I brought home with me from Wessel's farm are unique in Europe. Amongst the subjects are the bust of a Bushman, a woman carrying a load, an ostrich with a rider on its back, an ostrich meeting a rhinoceros, a jackal chasing a gazelle, but many are single figures of cows, gnus, and antelopes.—("Seven Years in South Africa," by Dr. Emil Holub, Vol. II, pp. 438–9.)

Strange Funeral Ceremony in the Tonga Islands, South Sea.

The day after the death of a Tintonga (the chief Tongan family), which was the day of the burial, every individual in every island the news had reached,—man, woman, and child,—had the head closely shaved. In the afternoon the body being already in the *fytoca*, or burial-place, the men, women, and children all bearing torches, sit down at about 60 yards from the grave. Two men from behind the grave now begin to blow conch-shells, and six others with large lighted torches, about 6 feet high and 6 inches thick, descend from the raised *fytoca*, and walk round one after the other several times, waving their flaming torches in the air.

After this ceremony these six leaders descended the mount again, and the moment they did so, the people advanced *en masse*, and following the six leaders with the big torches ascended the mount in single file. As they passed the back of the grave, the first six men deposited their extinguished torches on the ground, an example which was followed by the others. The ground was then cleared, the people separated and went to their respective homes.

Soon after death, certain persons stationed at the grave began again to sound the conch, while others chanted, partly in Samoan, a sort of song. The natives could give no account of what the other language was, nor how they came origi-

nally to learn the words. While this was going on, about 60 men would assemble near the grave for the performance of a ceremony, which, I suppose, has no parallel in the burial rites of the world. It being perfectly dark, the men would approach the mount, and pay their devotions to the goddess Cloacina, after which they retired to their homes. At daybreak next morning, all the women of the first rank, the wives and daughters of the greatest chiefs, would assemble, and with expressions of the profoundest humility, would make the place perfectly clean, and this extraordinary ceremony was repeated for fourteen nights, as was that of the burning torches.—("Coral Lands," by H. Stonehewer Cooper, Vol. II, p. 159.)

Celts from British Guiana.[1]

The place of the celt in the History of Culture is well understood by the members. I merely wish to record the existence of some varieties in the forms shown by six specimens from British Guiana. I regret I have not the information that would be desirable as to the exact circumstances of their finds to put before the members.

They were forwarded from Demerara by Mr. W. S. Turner, who collected them, to my friend Mr. A. G. Geoghegan, who has kindly allowed me to lay them before the Institution.

Two of these, ground or polished celts, were found in a kitchen-midden at Warramuri, on the Moruca, a river which runs into the sea side by side with the Pomeroon. Their outlines present a very different appearance. One is long and thin, widening towards the cutting adze-like edge, and with slight projecting ends to enable it the better to be fastened to its haft. It resembles specimens from the West Indian Islands. The second is very much decomposed on the surface. The cutting edge is fractured, showing it has done some service. The notches in the sides near the end are very deep, and it has a flat, or slightly grooved, end, as if it was hafted flat against the handle. There is an indication of a similar flatness on all these specimens. The notches at the sides, and projecting ends, is a peculiarity of South American Celts. Another specimen is not so rectangular in section. It looks like a wedge.

The small celt (very like a Venezuela specimen—the form is a very general one) was obtained from an Arcowais Indian, on the Essequibo River. It would be interesting to know how he used it, if hafted, or as an amulet.

Mr. F. W. Rudler has kindly examined these implements. He informs me they are formed of varieties of diabase, more or less decomposed superficially. The small polished, black-coloured implement from the Essequibo River is made of a fine grained doleritic rock. All these materials are the ordinary eruptive rocks of that country.

28, St. Oswald's Road, S.W. Geo. M. Atkinson.
January 18, 1881.

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[1] See proceedings of January 11th.

The International Congress of Prehistoric Archæology and Anthropology at Lisbon.[1]

Mr. John Evans gave a short account of this Congress, at which he had been present in the capacity of Delegate from the Institute. For all detailed particulars he referred to the *Compte-rendu* of the Congress, which will shortly be published, but he gave some particulars of two of the excursions. One of these was to Mujem, on the banks of the Tagus, to view some interesting kjökkenmöddings of much the same general character as those in Denmark, at the base of which, however, were numerous interments of human bodies laid in a contracted position. The other was to Otta, to inspect the beds in which it was thought that traces of man living in Miocene times had been discovered. This discovery had been accepted as authentic by many members of the Congress, but Mr. Evans had not been satisfied as to the undoubtedly human origin of the single bulbs of percussion on the flints, nor as to their actually forming integral parts of the beds in or on which they were found, nor as to the geological antiquity of the beds themselves. On most of the flints the bulbs were such as might have arisen from natural shocks, and there was no sign of the flints themselves having been used. Others apparently belonged to the surface, and were of no great antiquity. The sands and gravels of Otta, though probably of Tertiary origin, appear to have been disturbed at a later period, as their surface forms a plateau of considerable extent, and at a lower level than the undisturbed Miocene beds containing remains of *Hipparion*, &c., which in some parts form the border of the plateau.

The Museums in Lisbon were next noticed, and Mr. Evans called attention to the abundance of arrow-heads found in Portugal which are barbed, but without a central tang, and to a number of lance-heads polished on each face, but chipped at the edges. He also mentioned the discovery in Spain of a bronze halberd-blade, with three long rivets, much resembling an Irish blade figured by Wilde, and recommended those who assigned an Iberian origin to some of the ancient inhabitants of Ireland more closely to examine the facts indicated.

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[1] See Proceedings of January 11th.

I deeply regret to announce that my friend David Greig Rutherford, who joined this Institute in the year 1876, died in West Africa in the early part of this year, during a Natural History Expedition to that country. Had his life been prolonged there is little doubt that Anthropology, to which he was much attached, would have acquired many new facts from the interesting region of West Tropical Africa. As it is, such of his notes which were found after his decease as appertain to our science I have reproduced here, supplemented by extracts from a letter I recently received from him.

W. L. DISTANT.

NOTES ON THE PEOPLE OF BATANGA.

THE language spoken by the Batangas is simply a dialect of the Dualla, more or less corrupted by an infiltration of words from the neighbouring tribes speaking different languages. The inflection of words is sometimes very strongly marked, *e.g.*, *sui*, a fish, becoming *hui*, the aspirate being very decided, and *wea*, fire, being pronounced *veya*. Gradually, as we get nearer Cape St. John, the importation of foreign words becomes more marked, until we lose sight of the Dualla element altogether, about the neighbourhood of the Rio Muni, where it is replaced by the language of the Corisco tribe and its dialects. At Batanga there is a small town called Bapoko, or Bapook, containing a few members of the Makoko tribe, who still continue to speak their own language.

The Duallas appear to have settled at various places along the coast, from Camaroons southwards, as traders, but at no place have they penetrated more than thirty miles inland. Behind the line of coast occupied by the Batangas are scattered the villages of what are called the bushmen, or people belonging to the Mabaya tribe, who trade with another tribe further inland, called the N'gumbas, for the ivory they sell to the Batangas, who, again, dispose of it to the European traders. The N'gumbas themselves are only traders, and buy the ivory from other inland tribes, such as the M'pongwas, the Yaunder, and Bulis. The Mabayas tell the Batangas that the elephants from which the ivory is taken are killed by an enormous bird, and that they only venture under cover of night to where the bodies are in order to obtain the tusks.

The physique of the Batangas is in all essential characters the same as that of the Duallas. Some allowance, however, must be made for hereditary influences derived from intermarriage with the inland tribes. The men are well formed, many of them being over the average height, they are lithe and free in their mien and bearing, and are strongly without being stoutly built. These characteristics, not so commonly met with among the same race further north, are, I am inclined to think, due to the more active habits which during early life are imposed upon them by the necessity of acquiring skill

in fishing at sea during a certain number of hours nearly every day, and during the best part of the year. The Jaubus fish well, but not the Duallas. The Batanga Duallas are, however, an exception, and they have acquired no little skill in the art, which is practised, with rare exceptions, with hook and line, net-fishing not being practicable on account of the heavy surf which usually beats upon the beach. They begin to learn the art in early boyhood, and in many cases practise it till long after manhood is reached. The first thing they are taught is the use of the canoe, and in this they are trained almost from their infancy. The canoes most in use are mere thin shells, formed from a certain hard reddish wood, and vary from 6 to 10 feet in length by 1½ to 2 feet in breadth. A triangular board, about 1 foot in length, fixed at each end imparts a certain strength to the frail craft; and five seat-like bars, at nearly equal distances apart, fastened inside to the upper edges by strong cord, also serve the same purpose. Upon the middle bar the fisherman sits, sometimes with both legs in the water, and with one paddle propels and guides his canoe rapidly through the water. That the use both of canoe and paddle requires great skill, and its attainment long practice and much perseverance, is shown by the early age at which the natives begin to learn how to manage them. Children, scarcely able to toddle, may be seen mimicking with their little hands the motions of a paddle, and it is an ordinary thing to see young boys sitting in front of their houses fashioning models of canoes out of pieces of soft wood. When they are eight or nine years old, or sometimes earlier, they are provided with small canoes about twice their own length, with a small paddle, and partly from imitation and partly owing to inherited skill, they soon learn how to sit and balance themselves in their tiny crafts, and paddle themselves about in shallow water. After a time they become more venturesome, and push boldly out among the breakers. Should they get swamped, as in nine cases out of ten they do, they are greeted by the jeers of their companions, but should they get over the rough to the quiet water beyond, they are hailed with shouts of applause. When they have acquired sufficient skill, they are allowed to venture out to sea with fishing lines, and learn the art of fishing as best they may. Every morning, almost immediately after day-break, scores of people, old and young, may be seen hurrying down to the beach from the various villages carrying or dragging their canoes with them. If there should happen to be little surf, they launch them at once into the water, arrange their lines, and paddle off to their favourite grounds; but if the water is rough they content themselves first of all by getting the canoe into the shallows, and waiting until the heavier waves have rolled in. The canoe is then dragged over the surf and the man, by a dextrous leap, mounts astride it, until he has balanced himself, then, drawing his legs inside, he, by vigorous strokes of his paddle from right to left, urges it forward over the approaching breakers. If he has delayed a moment too long, or miscalculated his distance, he may

be caught by the first wave and swamped, and canoe and all sent ignominiously rolling shoreward, to the great amusement of the spectators on the beach, who on an unusually bad morning, gather in crowds to witness the departure of the fishermen, and who do not fail to reward any luckless attempt with ironical laughter. Should he, however, succeed in surmounting the first wave, with, perhaps, the only mischance of taking in some water, the which however he can quickly remove by a backward movement of one of his feet, he either advances bodily to the second, or, should it seem too much for him, quickly turns round and paddles back until it has broken, when facing round again, he meets the next wave in the same way. This he may have to do again and again till the favourable chance in a pause in the regular movement of the waves occurs, when, seizing advantage of it, he paddles out safely beyond the reach of the breakers. The same care, skill, dexterity, and close observation of the movements of the waves is necessary on returning to the beach. Advancing continuously till just outside of the breakers, he awaits the approach of an unusually large wave, which he allows to carry him shoreward, and, by vigorous paddling, keeping well behind it, until its crests begin to foam, when he quickly turns round, paddles back, and waits for the next wave. Guessing his distance and deciding that this one will take him right on to the beach, he allows it to carry him, but holds his canoe back as it breaks, and then over the surging surf paddles himself safely and triumphantly into shallow water. But not all are so successful. Many canoes get swamped, and sometimes damaged, and fish and fishing lines lost. They remain fishing for about six hours and seem to take to their work industriously. I have counted as many as a hundred canoes out of a single morning; and as the population of Batanga is by no means large, I calculate that the majority of the male adults are more or less engaged in this occupation. There cannot be a doubt that such work, requiring so much endurance, hardihood, and skill must have a lasting effect upon the right development of the bodies and the minds of these people. They are certainly among the most intelligent of the Dualla race, and I have seen none that excel them in point of physique. They do not, however, occupy themselves with fishing throughout life. With the approach of manhood, a Batanga begins to think of trading, for trading means making money, and money the buying of a wife. According as he succeeds in his trade, so is his natural tendency to greed developed, and his desire to be *somebody* strengthened. He takes more care of his outward appearance, puts on a shirt in addition to his loin-cloth, and when by dint of a more than usually successful speculation in ivory, he is able to don a felt hat, he considers himself a gentleman, and begins to look out for a wife. Having succeeded in getting one, he wants another, and another, till according as his domestic cares increase so the development of his manhood decreases. European commerce with Africa may have made the negro richer, but it has not made him wiser. It has only enabled him to indulge to a

greater extent than he did before in his hereditary vices and degenerate tastes. It may be said that in Africa, as elsewhere, money, without education and the knowledge how to use it, not for self and personal aggrandisement, but for the good of the community, or for the happiness and future welfare of the race, is an unmitigated curse.

Regarding the Batanga women I can say very little. They are derived chiefly from the neighbouring tribes, and in all respects are inferior to the men. The more well-to-do men appear to choose their women for their good looks, but some do not evince much taste in their selection. I have observed, however, that the more intelligent of the chiefs who have chosen wives as much for their good sense as their good looks, have usually rather intelligent children; and it sometimes happens that such men have married women who have been educated to some extent as well as trained to some industrial pursuit. Provided the girl has been gifted with good sense there cannot be a doubt regarding the beneficial effects of such a marriage, not only upon the family, but also upon the tribe. It is certainly better for educated African women to marry intelligent men of their own race than to hire themselves out as prostitutes to white traders; and were there more of such unions there would be less of that social demoralisation which exists at Gaboon, Fernando Po, and other places on the coast.

Among the Batangas I noticed three kinds of games,* one a species of backgammon, which, from what I could gather, is derived from some of the neighbouring tribes, probably from those further south. I have not found it among the Duallas of the Camarcons. It is usually played by men and youths. The second game is played by boys, and I have seen something similar to it further north. The boys take the broken half of a wooden basin, and placing it on the ground squat down, generally three boys in a row, on each side. They are provided with a number of small shells of a species of Achatina, shaped something like a top, and about an inch and a half long. One boy spins his shell on the inside of the half basin, and another on the opposite side follows suit. The spinning is done very cleverly, and exhibits not a little skill. As one spinning shell meets the other, the stronger drives the other out, and its owner forfeits it to the winner, whose turn it now is to spin to the shell of the next boy in the opposite row. And so he spins on until he either loses or gains in succession all the shells in the party; if he loses, another takes his place and goes on in the same manner. Of course, the game is almost interminable. The third game I have to mention is also played by boys. A number of them cut a transverse slice off the stem of a plantain tree, so as to form a disc about a foot in diameter, and about 2 inches in thickness, and, providing themselves with sharp-pointed sticks cut from the outer

* In a letter addressed to me, Mr. Rutherford remarks: "What a strange error Winwood Reade must have fallen into when he committed himself to the statement that the Guinea Negros have no games. Amongst the Batanga branch of the Duallas, I found no less then five."—W. L. D.

covering of the mid-rib of the frond of a species of palm, they repair to the beach, where the retiring tide has left a slope of hard wet sand. Here they divide themselves into two parties, each forming a row about 10 feet apart. Facing each other, with the smooth sandy beach sloping downward between them, the topmost boy of the right hand row sets the disc running down the middle. Every boy then throws his stick at the soft disc as it runs, and whoever hits it counts one to his side. A certain number of hits makes up the game, and whichever side reaches it first wins.

Another amusement I have observed at Batanga among the boys is the construction of a small flat boat with wheels and a sail which they place upon the smooth sand, and watch it propelled by the wind. Some years ago I observed some boys at Brass River amusing themselves in precisely the same manner.

Geophagy.

A somewhat curious instance of this custom came before me at Batanga in May 1880; and subsequent enquiry has enabled me to throw some light upon it. From what I could gather while at Small Batanga, the custom seems to prevail all along the coast as far as the island of Corisco, where I believe it is also known, and perhaps it extends further south.[1] I met with it first at Babani, where there occurs a deposit of yellowish red clay, containing about 15 per cent. of iron and a considerable quantity of mica and some quartz particles, but there is evidently a large quantity of organic matter in it. This clay is made up into balls of about 5 inches in diameter, and baked over a slow fire. When quite dry, and ready for use, a small portion is broken off, and placed in the hollow of any smooth leaf and reduced to powder between the finger and thumb. The leaf is then gently shaken in order to cause the harder and more gritty particles to fall aside. These are carefully removed, and the residue, consisting of a fine powder, is transferred to the mouth, masticated, and swallowed. I was informed that the men use it while on a long journey, when they do not wish to stop in order to cook food. As, however, they seldom travel far without carrying something in the way of provisions that can be eaten readily, this scarcely accounts adequately for the origin of the custom. Some enquiries made at Camaroons elicited the following additional information. The custom is known there, but does not exist to the same extent, or in the same manner as at Batanga. The material used is a very dirty earthy clay, with but little iron and no mica, and is derived from a deposit on the banks of the rivers. When baked in the sun it becomes very hard, and, indeed, is sometimes used in the construction of houses. The men sometimes, but seldom, eat it, but I am told the women, during the time of pregnancy, when they are supposed to be assailed by very

[1] On the Gold Coast, according to Winwood Reade, a white clay is frequently chewed or drunk in solution, the young people taking it as a sweetmeat, and the old people as a medicine.—W. L. D.

unnatural appetites, use it largely. Is it the result of inheritance, or merely from the force of imitation, that the custom is almost universal among the Camaroons children? I am told that all of them eat it, even those belonging to the mission, who are well fed, and are strangers to the sensation of hunger. By way of test, I showed some of them a small piece of the Batanga earth. They looked at it for a moment as if to make sure of it, then eagerly besought me to give them some. I gave them what I had in my hand, and they greedily swallowed it, afterwards expressing a desire that, as the kind I had given them was so nice, they would like some more. These children had just supped, and their evident appreciation of the clay could, therefore, hardly be connected with hunger, and would seem to indicate an appetite, or at least a liking, however unnatural, not much related to the desire for food. One of those children, I was informed, usually took a piece of the clay to bed with her, but this child, though well-fed, was always hungry.[1]

Tattooing.

This custom has evidently originated in certain marks being applied to the face and other parts of the body, in order to distinguish the members of one tribe from those of another. The same marks would be used for both sexes, but as the tendency to ornamentation became developed, they would be apt to observe some artistic method in making them. Among the Duallas, the custom at one time appears to have obtained with both sexes, with a preponderance, however, in the practise of it on the side of the women. The men did not always see the force of giving themselves needless pain, but the women, with a shrewd idea that it added to their charms, persisted in having it done. The *men* (and it is significant that in places where the men have ceased to tattoo themselves they continue to do it for the women) tattooed their children at an early age, but as the girls approached a marriageable age, they added, on their own account, various ornamentations to those already existing. As an example that tattooing in its later stages is regarded as an increase of beauty, I may mention an instance given me by

[1] Mr. James Orton in "The Andes and the Amazons" bears strong testimony to a like practice of this habit in Tropical America. "This habit is not confined to the Otomacs on the Orinoco, nor to Indians altogether; for negroes and whites have the same propensity." At Pebas "Mr. Hauxwell found it impossible to restrain his own children." On the Marañon "the half-breeds are mostly addicted to the practice of dirt eating." "Even strangers, English or the white Peruvians who have married with the Mestizos, and have had children by them, finds its presence among their little ones the plague of their life." Children commence the habit from the time they are four years old, or less, and frequently die from the results in two or three years." Officers here who have the Indian or half-breed children as servants in their employ, sometimes have to use wire masks to keep them from putting the clay into their mouths; and women, as they lie in bed sleepless and restless, will pull out pieces of mud from the adjoining walls of their room to gratify their strange appetite, or will soothe a squalling brat by tempting it with a lump of the same material.—W. L. D.

the wife of a missionary here. A woman belonging to some neighbouring tribe having come to stay at the mission was presented with a dress of some showy material as an inducement to her to discard the loin cloth she had been in the habit of wearing, and as an introduction to the habits of civilised life. She objected to wear the dress, however, upon the ground that if she did so she would thereby hide her beauty. It appears certain that the unmarried woman who is most finely tattooed wins most admiration from the men. Since, through the exertions of the missionaries, a certain amount of refinement has been introduced into Camaroons, the custom is gradually disappearing, chiefly owing, I understand, to the men ridiculing it, another proof that its continuance among the women was dependent upon the admiration of the men.[1]

Folk-lore.

Among the Duallas, a cock which crows during the night is instantly killed. It has recognised an evil-spirit passing the house, and has invited it to enter, and do some damage to the inmates.

If a man, on going to his work in the morning, sees a certain bird fly across his path, he returns home.

If starting on a journey by canoe, a man meets or sees a hippopotamus, and it gapes at him, he defers his journey.

If a man meets a chameleon, and it gapes at him, he returns home, expecting some misfortune to happen to him or his friends.

Wherever the chameleon is found, it is regarded, with feelings of dread. At Sierra Leone I once found some boys pelting with stones one which they had discovered crossing the path, and was endeavouring to find shelter among some herbage. On taking it up in my hand, I was loudly besought to throw it away, else I should die; and their amazement was great indeed, when, instead of doing so, I tied it securely in my handkerchief and put it away in my pocket. I was followed by a crowd of boys, evidently expecting to see me suddenly expire in agonies. The people of Angola have the

[1] Oscar Peschel, who describes tattooing as "another substitute for raiment" also remarks: "That it actually takes away from the impression of nudity is declared by all who have seen fully tattooed Albanese." But as bearing on Mr. Rutherford's view, we may quote Mr. Darwin, "Voy. Beagle," who when at New Zealand speaking of the clean, tidy, and healthy appearance of the young women who acted as servants within the houses, remarks: "the wives of the missionaries tried to persuade them not to be tattooed, but a famous operator having arrived from the south, they said, 'We really must have a few lines on our lips, else when we grow old, our lips will shrivel, and we shall be so very ugly.'" That tattooing is not always an adornment to women may be cited Captain Forbes', "British Burma." Among the Chyin (one of the "Wild Tribes") "is the practice of tattooing the faces of their women while young. This is not a slight line or spot here and there to serve as a beauty mark; but the whole face down to the lower bend of the jaw is completely covered, as with a black mask, with a tattooing of close transverse lines, in marked contrast with their natural yellow skin; and a more hideous disguise cannot be conceived. They can afford no satisfactory reason for this custom."—W. L. D.

same unreasoning fear of this harmless lizard; and I well remember my sensations on being, while travelling in a hammock near Ambrizette, suddenly dropped upon the hard ground by the men who carried me, they having seen a chameleon cross the path ahead of them. Among the Abo people and the Bakokos of Dibamba the same superstitious ideas prevail; and when I wished to have my house to myself, I found I would get rid of obtrusive guests by placing a chameleon above my door, and so long as it was there, no one dared enter. No other reptile inspires the same kind of fear. They appear to regard it with a mixture of ordinary fear and superstitious dread, both of which may be occasioned by the sudden changes of colour, and the threatening attitudes it assumes when excited. That the assumption by a harmless creature of colours and attitudes intended to produce fear is quite successful, I need only point to the facts of protective resemblance. Many caterpillars excite the same feeling, and though the natives frequently bring them to me, I never saw them handle any of them, and they have frequently expressed their surprise at the ease with which I did so myself.

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